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# PACKAGE CHECKING FIELD MANUAL

U.S. DEPARTMENT OF COMMERCE/National Bureau of Standards

## To Accompany NBS Handbook 133: **CHECKING THE NET CONTENTS OF PACKAGED GOODS**

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PACKAGE CHECKING FIELD MANUAL  
TO ACCOMPANY NBS HANDBOOK 133  
"CHECKING THE NET CONTENTS OF PACKAGED GOODS"

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NATIONAL BUREAU OF STANDARDS



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## INTRODUCTION

The Second Edition of NBS Handbook 133, "Checking the Net Contents of Packaged Goods" (1984) was written to meet several needs of weights and measures regulatory programs (package testing procedural guide, textbook for new inspectors, and reference book for unusual types of packages). This field manual is intended to be an adjunct to Handbook 133 (H-133), not a substitute for it. It may serve well as a checklist and quick reference guide, but H-133 remains the source of detailed explanations and procedures.

This manual has been assembled by extracting tables and report forms from H-133, rearranging the material, and adding tabbed dividers for convenient reference. Test procedure outlines and examples of completed report forms and worksheets have been added. A variation on the "Standard Pack Report Form" for packages labeled by weight only has also been included.

Page numbers for the field manual are printed at the top of each page. Page numbers from H-133 are printed at the bottom of each applicable table or chart for ease of reference back to the handbook.

The field manual is comprised of eight sections: Test Procedure Outlines, Sampling Plans, Variable Tare, Weighing Rules, MAV's, Report Forms and Worksheets, Examples, and a Random Number Table. A description of each section appears on the first page after each tab divider.



## SECTION 1. TEST PROCEDURE OUTLINES

Each outline describes the steps that are necessary to determine whether or not packages are in compliance and where to record information on the report form or worksheet. The outlines do not describe how to carry out each step; for this information, the inspector will have to consult H-133. The outlines for packages labeled by volume and count are abbreviated in their descriptions of how to determine lot conformance after an average net contents for the sample has been obtained. These latter outlines assume the inspector is familiar with these procedures. If necessary, the inspector should study the outline for standard pack packages labeled by weight.

The outlines are presented in the following order:

- o Outline of Package Test — Core Method
- o Category A or B, Standard Pack by Weight
- o Random Pack, Category B, Dry Tare
- o Packages Labeled by Liquid Volume
- o Packages Labeled by Count (can be used as a model for packages labeled by length, area, and dry volume)



FIGURE 3-4.  
OUTLINE OF PACKAGE TEST  
Standard Pack Packages Labeled by Weight

1. Fill in pertinent data on report form: what is being tested, UNIT OF MEASURE, MAV, INSPECTION LOT SIZE, SAMPLING PLAN information.
2. Select RANDOM SAMPLE and RANDOM TARE SAMPLE
3. Determine AVERAGE TARE WEIGHT
4. Determine NOMINAL GROSS WEIGHT (labeled weight + average tare weight)
5. Determine PACKAGE ERRORS by comparing sample packages with nominal gross weight
6. Determine UNREASONABLE ERRORS by comparing minus package errors with MAV

If number of unreasonable errors is greater than allowed by sampling plan,  
inspection lot fails test. No further testing is necessary.

7. Determine AVERAGE PACKAGE ERROR.

If average package error is zero or plus, inspection lot passes test.  
No further testing is necessary.  
If CATEGORY B plan is being used, and average package error is a  
minus value, inspection lot fails test. No further testing is necessary.

8. If a CATEGORY A plan is being used and average package error is minus, determine T.

If average minus package error is larger in magnitude (disregarding the sign)  
than T, inspection lot fails test. If average error is smaller, inspection lot passes.

## CATEGORY A OR B, STANDARD PACK BY WEIGHT

PROCEDURE	LOCATION ON THE REPORT FORM
Fill out report form heading, including PRODUCT IDENTITY, BRAND, LOT CODE, CONTAINER DESCRIPTION.	
LABELED CONTENTS	1
UNIT OF MEASURE	2
Look up MAV in Table 2-8 (page 41)	3
Convert MAV to DIMENSIONLESS UNITS by dividing $\boxed{3} \div \boxed{2}$	4
Determine inspection LOT SIZE (N)	5
Look up sampling plan from Category A or B (page 20 or 19) Check whether A or B	6
Record SAMPLE SIZE (n)	6
Record TARE SAMPLE SIZE	7
Record ALLOWED NUMBER OF UNREASONABLE ERRORS	8
If DRY TARE, select random sample from inspection lot and random tare sample from unused tare stock. Weigh tare units, record tare weights	b
If WET TARE, select random sample from inspection lot, and select random tare sample from the random sample. Gross weigh individual packages in tare sample, record	a
Empty tare sample packages, determine tare weights, record	b
If ALTERNATIVE TARE procedure is followed, check "alternative"	7
Look up INITIAL TARE SAMPLE SIZE in Table 2-6 (p. 29), record	7



## CATEGORY A OR B, STANDARD PACK BY WEIGHT

PROCEDURE	LOCATION ON THE REPORT FORM
Select initial tare sample from sample, determine gross weights	<input type="text" value="a"/>
Determine tare weights	<input type="text" value="b"/>
Calculate net weights for initial tare sample	<input type="text" value="c"/>
Determine range of net weights (Rc)	<input type="text" value="9"/>
Determine range of tare weights (Rt)	<input type="text" value="10"/>
Determine $R_c \div R_t$ by dividing <input type="text" value="9"/> $\div$ <input type="text" value="10"/>	<input type="text" value="11"/>
Look up how many packages must be opened for average tare (nt) in Table 2-7. Record Open additional packages for tare if necessary	<input type="text" value="12"/>
Average tare weights and record	<input type="text" value="13"/>
If moisture allowance is to be applied, or if foam aerosol or vacuum pack coffee being checked, record TARE CORRECTION	<input type="text" value="13a"/>
Compute NOMINAL GROSS WEIGHT by adding: <input type="text" value="1"/> + <input type="text" value="13"/> - <input type="text" value="13a"/> Record.	<input type="text" value="14"/>
Compute PACKAGE ERRORS for packages opened for tare by subtracting: <input type="text" value="a"/> - <input type="text" value="14"/> Record	<input type="text" value="d"/>
Compute PACKAGE ERRORS in DIMENSIONLESS UNITS by dividing: <input type="text" value="d"/> $\div$ <input type="text" value="2"/> Record	<input type="text" value="e"/>
Enter these package errors in cross hatched area of form	<input type="checkbox"/>
Compare unopened packages in sample with NOMINAL GROSS WEIGHT to determine remaining package errors; record in cross hatched area	<input type="checkbox"/>
Count number of minus package errors larger than MAV in <input type="text" value="4"/> Record.	<input type="text" value="16"/>

## CATEGORY A OR B, STANDARD PACK BY WEIGHT

PROCEDURE	LOCATION ON THE REPORT FORM
If the number in <input type="text" value="16"/> is larger than number in <input type="text" value="8"/> check YES: LOT FAILS . No further testing is necessary.	<input type="text" value="17"/>
If number in <input type="text" value="16"/> is equal or less than number in <input type="text" value="8"/> check NO--CONTINUE.	<input type="text" value="17"/>
Sum package errors, record TOTAL ERROR	<input type="text" value="15"/>
Average package errors, record AVERAGE ERROR	<input type="text" value="18"/>
Convert AVERAGE ERROR in DIMENSIONLESS UNITS to units of weight by multiplying: <input type="text" value="18"/> x <input type="text" value="2"/>	<input type="text" value="19"/>
If <input type="text" value="19"/> is zero or plus, check YES GO TO <input type="text" value="20"/> No further testing.	<input type="text" value="20"/>
If <input type="text" value="19"/> is minus: check NO	<input type="text" value="20"/>
If CATEGORY B, check "Cat. B, Lot Fails". No further testing.	<input type="text" value="20"/>
If CATEGORY A, check "Cat A, go to <input type="text" value="21"/> ". Determine RANGES	<input type="text" value="RANGES"/>
Calculate AVERAGE RANGE, record	<input type="text" value="21"/>
Use <input type="text" value="6"/> to look up value in Table 2-3, column 2, (p. 20), record	<input type="text" value="22"/>
Calculate d by multiplying: <input type="text" value="21"/> x <input type="text" value="22"/>	<input type="text" value="23"/>
Calculate $(n/N \times 100)$ by dividing and multiplying: <input type="text" value="6"/> ÷ <input type="text" value="5"/> x 100	<input type="text" value="24"/>
Use <input type="text" value="24"/> to look up f in Table 2-4 (page 21).	<input type="text" value="25"/>
Calculate T by multiplying: <input type="text" value="23"/> x <input type="text" value="25"/>	<input type="text" value="26"/>
If <input type="text" value="18"/> is larger than <input type="text" value="26"/> check YES LOT FAILS	<input type="text" value="27"/>
If <input type="text" value="18"/> is smaller than <input type="text" value="26"/> check NO LOT PASSES	<input type="text" value="27"/>
Record DISPOSITION OF LOT, APPROVED or REJECTED Check APPROVED only if <input type="text" value="17"/> is NO AND <input type="text" value="20"/> is YES	<input type="text" value="28"/>



## RANDOM PACK, CATEGORY B, DRY TARE

PROCEDURE	LOCATION ON THE REPORT FORM
Fill out report form heading, including: LOT SIZE	<input type="text" value="1"/>
From LOT SIZE, look up in Table 2-5 (p. 19) : SAMPLE SIZE (n) and record	<input type="text" value="2"/>
check CATEGORY B	<input type="text" value="2"/>
Look up in Table 2-5 the TARE SAMPLE SIZE and record	<input type="text" value="3"/>
Look up in Table 2-5 the ALLOWED NUMBER OF UNREASONABLE ERRORS	<input type="text" value="4"/>
Record UNIT OF MEASURE and check whether "lb" or "oz"	<input type="text" value="5"/>
Check DRY TARE on right hand side of form	TARE <input type="checkbox"/> DRY
Select RANDOM SAMPLE from INSPECTION LOT. Rearrange packages from lightest to heaviest. Select RANDOM TARE SAMPLE from unused tare stock. Have at least two complete tare units (boat, soaker, label, shrink wrap) prepared for each boat size. Compare two tare units to determine whether tare weights vary.	
<u>If tare weights vary,</u> record each tare weight on right hand side of form	PACKAGE 1 TARE 1 <input type="text"/>
Average tare weights	<input type="text" value="6"/>
<u>If tare weights do not vary,</u> record "actual dry unit used"	TARE <input checked="" type="checkbox"/> DRY <i>actual dry unit used</i>
Record PRODUCT DESCRIPTION, LOT CODE, UNIT PRICE	<input type="text" value="7"/>
Record LABELED WEIGHT for each package arranged from lightest to heaviest	<input type="text" value="8"/>
<u>If tare weights do not vary,</u> compare each unopened package with: Actual dry tare unit + weights equal to LABELED WEIGHT of each package. Record package errors for each package	<input type="text" value="9"/>

## RANDOM PACK, CATEGORY B, DRY TARE

PROCEDURE	LOCATION ON THE REPORT FORM
<p>If <u>dry tare weights vary</u>, compare each unopened package with: Weights equal to: AVERAGE TARE + LABELED WEIGHT; by adding <math>\boxed{6} + \boxed{8}</math> Record package errors for each package</p>	$\boxed{9}$
Look up MAV in Table 2-8 (p. 41) for lightest package; record	$\boxed{10}$
Convert MAV to DIMENSIONLESS UNITS by dividing: $\boxed{10} \div \boxed{5}$	$\boxed{11}$
<p>If any minus package errors are larger than MAV in <math>\boxed{11}</math> look up MAV's for those package labeled weights. Record</p>	$\boxed{10}$ & $\boxed{11}$
Circle minus package errors in $\boxed{9}$ that are larger than MAV in $\boxed{11}$	
Count circled package errors and record how many	$\boxed{13}$
<p>If the number recorded in <math>\boxed{13}</math> is more than zero check YES LOT FAILS</p>	$\boxed{14}$
If the number recorded in $\boxed{13}$ is zero, check NO CONTINUE	$\boxed{14}$
Sum the package errors. Record TOTAL ERROR	$\boxed{12}$
Calculate AVERAGE ERROR by dividing: $\boxed{12} \div \boxed{2}$	$\boxed{15}$
<p>Convert AVERAGE ERROR in DIMENSIONLESS UNITS to units of weight by multiplying: <math>\boxed{15} \times \boxed{5}</math></p>	$\boxed{16}$
If AVERAGE ERROR in $\boxed{16}$ is zero or plus, check YES GO TO $\boxed{18}$	$\boxed{17}$
If AVERAGE ERROR in $\boxed{16}$ is minus, check NO LOT FAILS	$\boxed{17}$
<p>Record DISPOSITION OF LOT, APPROVED or REJECTED Check APPROVED if <math>\boxed{14}</math> is NO and <math>\boxed{17}</math> is YES; REJECTED if <math>\boxed{14}</math> is YES or <math>\boxed{17}</math> is NO.</p>	$\boxed{18}$

## PACKAGES LABELED BY LIQUID VOLUME

PROCEDURE STEP NUMBERS REFER TO WORKSHEET; BOXES TO REPORT FORM	LOCATION ON THE WORKSHEET	LOCATION ON THE REPORT FORM
Fill out report form heading, including PRODUCT IDENTITY, BRAND, LOT CODE, CONTAINER DESCRIPTION, and		
LABELED CONTENTS		1
UNIT OF MEASURE		2
Determine inspection LOT SIZE (N), Record		5
Look up sampling plan Category A or B, Table 2-2(p.19) or Table 2-5(p.20); check A or B		6
Record SAMPLE SIZE (n)		6
Record TARE SAMPLE SIZE		7
Record ALLOWED NUMBER OF UNREASONABLE ERRORS		8
Select sample and from it, tare sample.		
Gross weigh first package in tare sample	1. Gross Weight	
Select appropriate flask, wet it down. Record	6. Volume of Flask	
Weigh empty flask; record weight	4. Flask Weight(empty)	
Open first package, pour liquid into flask Set liquid level to mark on flask neck Weigh flask and liquid	3. Flask Weight(full)	
Take liquid's temperature; record	7. Temp of Liquid	
Empty remaining liquid from package, clean container, weigh tare; record tare weight	2. Tare Weight	

## PACKAGES LABELED BY LIQUID VOLUME

PROCEDURE	LOCATION ON THE WORKSHEET	LOCATION ON THE REPORT FORM
Subtract empty flask weight from full flask weight (Step 3 - Step 4 on worksheet)	5. Weight of Liquid	
Repeat procedure from measuring the gross weight through finding the weight of the liquid for second package selected for tare; record all measurements.	Steps 1. through 7. marked "(2nd Pkg)"	
If the weights recorded in Step 5 do not vary from each other, check NO	Step 8.	
If the weights recorded in Step 5 DO vary from each other, look up how much they are allowed to vary in Table 4-3 (page 38).		
If weights vary by more than Table 4-3, check YES : ALL PACKAGES MUST BE OPENED	Step 8.	
If weights vary by less than Table 4-3, check NO and continue	Step 8.	
Average weights recorded in Step 5	Step 9.	
Compute AVERAGE WEIGHT OF LABELED VOLUME by the following arithmetic: $\boxed{1} \times \text{Step 9} \div \text{Step 6}$	Step 10.	
Determine AVERAGE TARE by averaging weights recorded in Step 2	Step 12.	$\boxed{13}$
Determine NOMINAL GROSS WEIGHT by adding: Step 12 + Step 10		
Record	Step 13.	$\boxed{14}$
Determine PACKAGE ERRORS for packages opened for tare by subtracting: Step 1 - Step 13	Step 14.	

## PACKAGES LABELED BY LIQUID VOLUME

PROCEDURE	LOCATION ON THE WORKSHEET	LOCATION ON THE REPORT FORM
Determine PACKAGE ERRORS for these packages in DIMENSIONLESS UNITS by dividing Step 14 $\div$ <span style="border: 1px solid black; padding: 0 5px;">2</span>		
Record on worksheet and in crosshatched area of report form.	Step 15	<div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto; position: relative;"><div style="position: absolute; top: 0; right: 0; width: 10px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px);"></div></div>
Look up MAV in Table 2-9 (page 43).	Step 16	<span style="border: 1px solid black; padding: 0 5px;">3</span>
Convert MAV in volume units to weight by the following arithmetic: Step 16 $\times$ Step 10 $\div$ <span style="border: 1px solid black; padding: 0 5px;">1</span>	Step 17	
Convert MAV to DIMENSIONLESS UNITS dividing Step 17 $\div$ <span style="border: 1px solid black; padding: 0 5px;">2</span>	Step 18	<span style="border: 1px solid black; padding: 0 5px;">4</span>
Compare unopened packages in sample with NOMINAL GROSS WEIGHT, record PACKAGE ERRORS in crosshatched area of report form		<div style="border: 1px solid black; width: 30px; height: 30px; margin: 0 auto; position: relative;"><div style="position: absolute; top: 0; right: 0; width: 10px; height: 10px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, black 2px, black 4px);"></div></div>
Count number of minus package errors larger than MAV in <span style="border: 1px solid black; padding: 0 5px;">4</span>		<span style="border: 1px solid black; padding: 0 5px;">16</span>
Continue filling out report form		<span style="border: 1px solid black; padding: 0 5px;">17</span> and <span style="border: 1px solid black; padding: 0 5px;">18</span>
Convert AVERAGE ERROR to units of volume by the following arithmetic: <span style="border: 1px solid black; padding: 0 5px;">18</span> $\times$ <span style="border: 1px solid black; padding: 0 5px;">2</span> $\times$ <span style="border: 1px solid black; padding: 0 5px;">1</span> $\div$ Item 10	Step 19	<span style="border: 1px solid black; padding: 0 5px;">19</span>
Complete report form to indicate DISPOSITION OF LOT as APPROVED or REJECTED		<span style="border: 1px solid black; padding: 0 5px;">20</span> through <span style="border: 1px solid black; padding: 0 5px;">28</span> as applicable



## PACKAGES LABELED BY COUNT

PROCEDURE STEP NUMBERS REFER TO WORKSHEET; BOXES TO REPORT FORM	LOCATION ON THE WORKSHEET	LOCATION ON THE REPORT FORM
Fill out report form heading, including PRODUCT IDENTITY, BRAND, LOT CODE, CONTAINER DESCRIPTION, and		
LABELED CONTENTS		1
UNIT OF MEASURE		2
Determine inspection LOT SIZE (N), Record		5
Look up sampling plan Category A or B Table 2-2 (p.20) or Table 2-5 (p.19); check A or B		6
Record SAMPLE SIZE (n)		6
Record TARE SAMPLE SIZE		7
Record ALLOWED NUMBER OF UNREASONABLE ERRORS		8
Select sample and from it, tare sample		
Gross weight first package in tare sample	1. Gross Weight	
Weigh empty container and record tare weight	2. Tare Weight	
Open first package and count items in package	3. Count in Package	
Weigh counted items in first package	4. Weight of Counted Items	
Calculate weight of labeled count by the following arithmetic: <div>1</div> × step 4 ÷ step 3	5. Weight of Labeled Count	
Repeat procedure, from measuring the gross weight through calculating the weight of the labeled count, for second package selected for tare; record	Steps 1. through 5.	

## PACKAGES LABELED BY COUNT

PROCEDURE  STEP NUMBERS REFER TO WORKSHEET; BOXES TO REPORT FORM	LOCATION ON THE WORKSHEET	LOCATION ON THE REPORT FORM
Look up MAV in Table 2-10. (p. 45); record	Step 6.	3
Calculate MAV/6 by the following arithmetic Step 6 $\times$ Step 4 $\div$ 6 $\div$ Step 3	Step 7.	
If the value in Step 7 is smaller than the scale division, ALL PACKAGES MUST BE OPENED; check NO	Step 8.	
If the value in Step 7 is equal to or larger than the scale division, check YES	Step 8.	
If the weights recorded in Step 5 do <u>not</u> vary from each other, check NO; record weight from Step 5	Step 9.	
If the weights recorded in Step 5 DO vary from each other, look up how much they are allowed to vary in Table 4-3 (p. 38).		
If weights in Step 5 vary by more than Table 4-3, check YES; ALL PACKAGES MUST BE OPENED	Step 9.	
If weights in Step 5 vary less than Table 4-3, check NO and average weights in Step 5.	Step 9.	
Determine AVERAGE TARE by averaging weights recorded in Step 2	Step 10.	13
Determine NOMINAL GROSS WEIGHT by adding: Step 10 + Step 9; record	Step 11.	14
Determine PACKAGE ERRORS for packages opened for tare by subtracting: Step 1 - Step 11	Step 12.	

## PACKAGES LABELED BY COUNT

PROCEDURE  STEP NUMBERS REFER TO WORKSHEET; BOXES TO REPORT FORM	LOCATION ON THE WORKSHEET	LOCATION ON THE REPORT FORM
Determine PACKAGE ERRORS for these packages in DIMENSIONLESS UNITS by dividing: Step 12 $\div$ <input type="text" value="2"/>	Step 12.	
Record on worksheet and in crosshatched area of report form.	Step 13.	<input type="checkbox"/>
Convert MAV in count to units of weight by the following arithmetic: Step 6 $\times$ Step 9 $\div$ <input type="text" value="1"/>	Step 14.	
Convert MAV to DIMENSIONLESS UNITS dividing: Step 14 $\div$ <input type="text" value="2"/>	Step 15.	<input type="text" value="4"/>
Compare unopened packages in sample with NOMINAL GROSS WEIGHT, record PACKAGE ERRORS in crosshatched area of report form		<input type="checkbox"/>
Count number of minus package errors larger than MAV in <input type="text" value="4"/>		<input type="text" value="16"/>
Continue filling out report form		<input type="text" value="17"/> and <input type="text" value="18"/>
Convert AVERAGE ERROR back to count by the following arithmetic: <input type="text" value="18"/> $\times$ <input type="text" value="2"/> $\times$ <input type="text" value="1"/> $\div$ Step 9	Step 16.	<input type="text" value="19"/>
Complete report form to indicate DISPOSITION OF LOT as APPROVED or REJECTED		<input type="text" value="20"/> through <input type="text" value="28"/> as applicable



## SECTION 2. SAMPLING PLANS

In this section tables from H-133 describe the various types of sampling plans and associated look-up values. The tables are in the most likely order of use:

- o Sampling plans of Category B (Table 2-5)
- o Sampling plans of Category A (Table 2-2)
- o Values of  $0.8598/\sqrt{n}$  for sample size  $n$  (Table 2-3)
- o Values of  $f$  for percent of lot sampled (Table 2-4)
- o Calculation of the average range (Appendix H)
- o Sampling plans for packages labeled by low count (Table 5-1)
- o Sampling plans for packages given tolerances (Table 5-2)



**Table 2-5. Sampling plans of Category B.**

1 Lot size (number of packages in lot)  N	2 Sample size (number of packages in sample)  n	3 Tare sample size <sup>a</sup> (number of packages chosen for tare determination)  $n_t$	4  Number of minus package errors allowed to ex- ceed the MAV <sup>b</sup>
Up to and including 250	10	2	0
251 and greater	30	2	0

<sup>a</sup>Special rules for tare sampling apply when Section 2.11.4. is used (glass or aerosol packages).

<sup>b</sup>See Tables 2-8 through 2-11 (pages B-9 to B-14), Sections 2.12. and 2.13.

Table 2-2. Sampling plans of Category A.

1	2	3	4
Lot size (number of packages in lot)	Sample size (number of packages in sample)	Tare sample size <sup>a</sup> (number of packages chosen for tare determination)	Number of minus package errors allowed to exceed the MAV <sup>b</sup>
N	n	n <sub>t</sub>	
30 or less	all	2	0
31-800	30	2	1
801-2,000	50	5	2
2,001-5,000	80	5	3
5,001-15,000	125	5	5
15,001 and greater	200	10	7

<sup>a</sup>Special rules for tare sampling apply when Section 2.11.4. is followed (this is the tare procedure for variable tare and must be used for glass or aerosol packages).

<sup>b</sup>See Tables 2-8 through 2-11 (pages B-9 to B-14), and Sections 2.12. and 2.13.

Table 2-3. Values of  $\frac{0.8598}{\sqrt{n}}$  and  $\frac{2}{\sqrt{n}}$  for sample size n.

1	2	3
n sample size	$\frac{0.8598}{\sqrt{n}}$ used only when $\bar{R}$ is calculated	$\frac{2}{\sqrt{n}}$ used only when s is calculated
30	0.1570	0.3652
50	0.1216	0.2828
80	0.09613	0.2236
125	0.07691	0.1789
200	0.06080	0.1414

Table 2-4. Values of f for percent of lot sampled \*

Percent of lot sampled	f	Percent of lot sampled	f	Percent of lot sampled	f
1	.99	36	.80	71	.54
2	.99	37	.79	72	.53
3	.98	38	.79	73	.52
4	.98	39	.78	74	.51
5	.97	40	.77	75	.50
6	.97	41	.77	76	.49
7	.96	42	.76	77	.48
8	.96	43	.75	78	.47
9	.95	44	.75	79	.46
10	.95	45	.74	80	.45
11	.94	46	.73	81	.44
12	.94	47	.73	82	.42
13	.93	48	.72	83	.41
14	.93	49	.71	84	.40
15	.92	50	.71	85	.39
16	.92	51	.70	86	.37
17	.91	52	.69	87	.36
18	.91	53	.69	88	.35
19	.90	54	.68	89	.33
20	.89	55	.67	90	.32
21	.89	56	.66	91	.30
22	.88	57	.66	92	.28
23	.88	58	.65	93	.26
24	.87	59	.64	94	.24
25	.87	60	.63	95	.22
26	.86	61	.62	96	.20
27	.85	62	.62	97	.17
28	.85	63	.61	98	.14
29	.84	64	.60	99	.10
30	.84	65	.59	100	0
31	.83	66	.58		
32	.82	67	.57		
33	.82	68	.57		
34	.81	69	.56		
35	.81	70	.55		

\*Percent of lot sampled =  $\frac{\text{sample size}}{\text{lot size}} \times 100 = \frac{n}{N} \times 100$

## APPENDIX H. CALCULATION OF THE AVERAGE RANGE

To calculate the average range of package errors for groups of 5 packages:

1. Record the package errors in successive groups of five packages in the order of weighing. (See Figure 2-5, page 2-19, and page A-1.)

For example, the following package errors were recorded on the report form (only the first three columns are shown):

pkg. number	pkg. error	pkg. number	pkg. error	pkg. number	pkg. error
(1)	+2	(6)	-2	(11)	+2
(2)	+4	(7)	-4	(12)	-4
(3)	+5	(8)	-5	(13)	+5
(4)	+10	(9)	-10	(14)	+10
(5)	+3	(10)	-3	(15)	-3

2. Calculate the range (R) of package errors for each group of five. R does not have a sign.

The range is obtained as follows:

- o If there are only plus errors in a group of five, subtract the smallest plus error from the largest plus error. This is the range (R) for the group.

For example for the first group of five packages:

$$\begin{array}{r}
 +2 \\
 +4 \\
 +5 \\
 +10 \\
 +3 \\
 R = +10 - (+2) = 8
 \end{array}$$

- o If there are only minus errors in the group, subtract the largest number with a minus sign from the smallest number with a minus sign. This is the range (R) for the group.

For example for the second group of five packages:

$$\begin{array}{r}
 -2 \\
 -4 \\
 -5 \\
 -10 \\
 -3 \\
 R = -2 - (-10) = 8
 \end{array}$$

- o If there are both plus and minus errors in the group of five, add the largest error which has a plus sign to the largest error which has a minus sign (but ignore the minus sign). This is the range (R) of the group.

For example for the third group of five packages:

$$\begin{array}{r}
 +2 \\
 -4 \\
 +5 \\
 +10 \\
 -3 \\
 R = +10 + 4 = 14
 \end{array}$$

3. Calculate the sum of all R and note the number of groups. For example, let us consider the previous three examples as one set of sample data. For these examples the sum of  $R = 8 + 8 + 14 = 30$  and the number of groups is 3.
4. Calculate the average R, called  $\bar{R}$ , as follows:

$$\bar{R} = \frac{\text{sum of all R (step 3)}}{\text{number of groups}}$$

$$\text{In the example above, } \bar{R} = \frac{30}{3} = 10$$

When calculating the range in net weights or range in tare weights for the alternative tare procedure, the range is the difference between the largest and smallest weights.

For example, the following tare weights are recorded:

0.201 lb  
 0.200 lb  
 0.204 lb  
 0.199 lb  
 0.201 lb

The range in tare weights is  $0.204 \text{ lb} - 0.199 \text{ lb} = 0.005 \text{ lb}$ .

**Table 5-1. Sampling plans for packages labeled by low count<sup>a</sup>**

1	2	3	4
Lot size (number of packages in lot)  N	Sample size (number of packages in sample)  n	Tare sample size (number of packages chosen for tare determination)  $n_t$	Number of packages allowed to contain fewer than the labeled count.
Up to and includ- ing 500	10	2	1
501-5000	30	2	2
5001 and greater	50	5	3

<sup>a</sup>Labeled count is 50 or fewer units.



Table 5-2. Sampling plans for packages given tolerances.

1	2	3	4
Lot size N	Sample size n	Tare sample size $n_t$	Number of package errors which may exceed allowable difference
Up to and including 500	10	2	0
501-5,000	30	2	1
5,0001 and over	50	5	2



### SECTION 3. VARIABLE TARE

This section provides three tables needed to determine the average tare of glass, aerosol, or other variable tare packages. (This procedure is called the "Alternative Tare Method" in H-133.) The tables:

- o Specify the number of packages to open initially as a function of the sampling plan category (A or B) and lot size (Table 2-6. Initial tare sample size for alternative procedure.)
- o Specify the total number of packages for which tare weights must be determined (to obtain an average tare) as a function of the sample size and the value of the ratio  $R_c/R_t$  (Table 2-7. Total number of packages (nt) to be opened for tare determination.)
- o Correct the tare weights of foam aerosol products (Table 3-2. Test allowances for foam products.)



**Table 2-6. Initial tare sample size for alternative tare procedures.**

Sampling plan Category	Lot size	Initial tare sample size
A	all	5 packages
B	equal to or less than 250 packages	2 packages
	greater than 250 packages	5 packages

Table 2-7. Total number\* of packages ( $n_t$ ) to be opened for tare determination.

Ratio R <sub>C</sub> /R <sub>t</sub>	number of packages in sample					
	n=10	n=30	n=50	n=80	n=125	n=200
	n <sub>t</sub>	n <sub>t</sub>	n <sub>t</sub>	n <sub>t</sub>	n <sub>t</sub>	n <sub>t</sub>
0.2 OR LESS	10	30	50	80	125	200
0.21 - 0.40	10	29	49	77	121	193
0.41 - 0.60	10	28	46	74	115	184
0.61 - 0.80	9	26	44	69	108	173
0.81 - 1.00	8	24	40	64	100	160
1.01 - 1.20	8	23	37	59	92	148
1.21 - 1.40	7	21	34	54	84	135
1.41 - 1.60	7	19	31	49	77	122
1.61 - 1.80	6	17	28	45	69	111
1.81 - 2.00	5	15	25	40	63	100
2.01 - 2.20	5	14	23	37	57	91
2.21 - 2.40	5	13	21	33	52	82
2.41 - 2.60	4	12	19	30	47	75
2.61 - 2.80	4	11	17	28	43	68
2.81 - 3.00	4	10	16	25	39	62
3.01 - 3.20	3	9	15	23	36	57
3.21 - 3.40	3	8	13	21	32	52
3.41 - 3.60	3	8	12	19	30	48
3.61 - 3.80	3	7	11	18	28	44
3.81 - 4.00	2	6	10	16	25	40
4.01 - 4.20	2	6	10	15	24	37
4.21 - 4.40	2	6	9	14	22	35
4.41 - 4.60	2	5	8	13	20	32
4.62 - 4.80	2	5	8	12	19	30
4.81 - 5.00	2	5	7	12	18	28
5.01 - 5.20	2	4	7	11	17	26
5.21 - 5.40	2	4	7	10	16	25
5.41 - 5.60	2	4	6	10	15	23
5.61 - 5.80	2	4	6	9	14	22
5.81 - 6.00	2	3	5	8	13	20

\* Including those already opened for initial tare determination.

Table 2-7 (continued). Total number\* of packages ( $n_t$ ) to be opened for tare determination.

Ratio $R_C/R_t$	number of packages in sample				
	$n=10$	$n=30$	$n=50$	$n=80$	$n=125$
	$n_t$	$n_t$	$n_t$	$n_t$	$n_t$
6.01 - 6.20	2	3	5	8	12
6.21 - 6.40	2	3	5	8	12
6.41 - 6.60	2	3	5	7	11
6.61 - 6.80	2	3	5	7	10
6.81 - 7.00	2	3	5	7	10
7.01 - 7.20	2	3	5	6	9
7.21 - 7.40	2	3	5	6	9
7.41 - 7.60	2	2	5	6	9
7.61 - 7.80	2	2	5	5	8
7.81 - 8.00	2	2	5	5	8
8.01 - 8.20	2	2	5	5	8
8.21 - 8.40	2	2	5	5	7
8.41 - 8.60	2	2	5	5	7
8.61 - 8.80	2	2	5	5	7
8.81 - 9.00	2	2	5	5	6
9.01 - 9.20	2	2	5	5	6
9.21 - 9.40	2	2	5	5	6
9.41 - 9.60	2	2	5	5	6
9.61 - 9.80	2	2	5	5	5
9.81 - 10.00	2	2	5	5	5
10.01 - 10.20	2	2	5	5	5
10.21 - 10.40	2	2	5	5	5
10.41 - 10.60	2	2	5	5	5
10.61 - 10.80	2	2	5	5	5
10.81 - 11.00	2	2	5	5	5
11.01 - 11.20	2	2	5	5	5

\* Including those already opened for initial tare determination.

Table 3-2. Test allowances for foam aerosol products

Avoirdupois:		Test allowance	
Labeled weight of package		Ounce	Pound
0 to less than	1 1/2 oz	0	0
1 1/2 oz to less than	5 oz	1/16	0.004
5 oz to less than	8 oz	1/8	0.008
8 oz to less than	11 oz	3/16	0.012
11 oz to less than	14 oz	1/4	0.016
14 oz to less than 1 lb	1 oz	5/16	0.020
1 lb 1 oz or more		3/8	0.023
Metric:		Test allowance	
Labeled weight of package		Grams	
0 to less than	50 g	0	
50 g to less than	100 g	1	
100 g to less than	200 g	3	
200 g to less than	300 g	5	
300 g to less than	400 g	7	
400 g to less than	500 g	9	
Over 500 g		10	



#### SECTION 4. WEIGHING RULES

This section contains reference tables for:

- o Determining the maximum size of the unit of measure to record package errors for packages labeled by weight. This table also guides the inspector in the selection of appropriate weighing equipment. (Table 3-1.)
- o Selecting the capacity of scale to be used when weighing liquids (Table 4-1.)
- o Determining the maximum size of the unit of measure used to record package errors when weighing packages labeled by liquid volume (Table 4-2.)
- o Determining whether the variation in the weights of equal amounts of product from two different packages not labeled by weight is too large to permit package error determination by weighing. (Table 4-3.)



Table 3-1. Recommended maximum size of scale division on the scale used in checking package weights.

Avoirdupois		Metric units	
Labeled weight	Scale divisions (oz avoirdupois) (lb)	Labeled weight	Scale division (kg)
Up to and including 1.92 oz (0.12 lb)	a	Up to and including 82 g	a
Greater than 1.92 oz (0.12 lb) to and including 5.44 oz (0.34 lb)	1/32 <sup>b</sup>	Greater than 82 g to and including 250 g	0.001 <sup>b</sup>
Greater than 5.44 oz (0.34 lb) to and including 20 oz (1.25 lb)	1/16	Greater than 250 g to and including 900 g	0.002
Greater than 1.25 lb to and including 4 lb	1/8	Greater than 900 g to and including 2.5 kg	0.005
Greater than 4 lb to and including 8 lb	1/4	Greater than 2.5 kg to and including 30 kg	0.01
Greater than 8 lb to and including 25 lb	1/2	Greater than 30 kg to and including 60 kg	0.05
Greater than 25 lb to and including 50 lb	1	Greater than 60 kg	0.1
Greater than 50 lb to and including 150 lb	4		
Greater than 150 lb	8		

<sup>a</sup>An analytical or other high accuracy balance will be necessary for weighing packages in this category.

<sup>b</sup>The equal-arm package scale must be used as null-indicator for packages labeled from 1.92 to 5.44 oz or 82 to 250 g to eliminate effects of possible tower errors.

**Table 4-1. Weighing devices appropriate to use to check common consumer products labeled by liquid volume.**

Labeled volume (inch-pound)	Device	Labeled volume (metric)
Up to and including 4.25 fl oz	analytical or other high accuracy balance	Up to and including 126 mL
Greater than 4.25 fl oz to and including 32 fl oz	small capacity equal-arm scale or equivalent	Greater than 126 mL to and including 1 L
Greater than 32 fl oz to and including 3 gal	large capacity equal-arm scale or equivalent	Greater than 1 L to and including 12 L
Greater than 3 gal	commercial scale and substitution weighing	Greater than 12 L

Table 4-2. Recommended maximum size of scale division on the scale to be used in checking weights of packaged goods labeled by liquid volume.

Inch-Pound			Metric	
Labeled volume	Scale division		Labeled volume	Scale division (g)
	(oz avoird)	(lb)		
Up to and including 4.25 fl oz	a	a	Up to and including 3 mL	0.01 <sup>a</sup>
Greater than 4.25 fl oz to and including 17.00 fl oz	1/32 <sup>b</sup>	0.002 <sup>b</sup>	Greater than 3 mL to and including 126 mL	0.1 <sup>a</sup>
Greater than 17.00 fl oz to and including 55.00 fl oz	1/16	0.004	Greater than 126 mL to and including 503 mL	1.0 <sup>b</sup>
Greater than 55.00 fl oz to and including 1.25 gal	1/8	0.01	Greater than 503 mL to and including 2.041 L	2.0
Greater than 1.25 gal to and including 1.875 gal	1/4	0.02	Greater than 2.041 L to and including 5.489 L	5.0
Greater than 1.875 gal to and including 4.375 gal	1/2		Greater than 5.489 L to and including 37.5 L	10.0
Greater than 4.375 gal to and including 9 gal	1	0.05		
Greater than 9 gal to and including 18 gal	2	0.1		

<sup>a</sup>Use analytical or other high accuracy balance.

<sup>b</sup>Use package checking scale as null indicator.

**Table 4-3. Maximum permitted difference in weights of two equal quantities according to the type of scale used to weigh.**

Type of Scale	Pounds	Grams
Analytical or other high accuracy balance	0.0001	0.05
Small capacity equal-arm scale or equivalent	0.002	1.0
Large capacity equal-arm scale or equivalent	0.004	2.0
Commercial scale up to and including 30 lb (14 kg)	0.01	5.0
Commercial scale above 30 lb (14 kg) up to and including 100 lb	0.02	9.0

## SECTION 5. MAV's

In this section, tables list the limits of unreasonable minus package errors (MAV's) for application to individual packages according to their labeled net quantity statements:

- o Weight (Table 2-8.)
- o Volume (Table 2-9.)
- o Count (Table 2-10.)
- o Length or Area (Table 2-11.)
- o U.S.D.A. Lower Limits for Individual Packages





Table 2-8. MAV's for an individual package labeled by weight<sup>a</sup>.

Avoirdupois units			Metric units	
Labeled weight	MAV		Labeled weight	MAV
Pounds or ounces	Decimal pounds	Fractional ounces	Grams	Grams
up to and including 0.08 lb up to and including 1.28 oz	10% of labeled weight		up to and including 36	10% of labeled weight
0.08+ <sup>b</sup> to <sup>c</sup> 0.12 lb 1.28+ to 1.92 oz	0.008	1/8	36+ to 54	4
0.12+ to 0.18 lb 1.92+ to 2.88 oz	0.012	3/16	54+ to 82	5
0.18+ to 0.26 lb 2.88+ to 4.16 oz	0.016	1/4	82+ to 118	7
0.26+ to 0.34 lb 4.16+ to 5.44 oz	0.020	5/16	118+ to 154	9
0.34+ to 0.46 lb 5.44+ to 7.36 oz	0.024	3/8	154+ to 209	11
0.46+ to 0.58 lb 7.36+ to 9.28 oz	0.028	7/16	209+ to 263	13
0.58+ to 0.70 lb 9.28+ to 11.20 oz	0.032	1/2	263+ to 318	15
0.70+ to 0.84 lb 11.20+ to 13.44 oz	0.036	9/16	318+ to 381	16
0.84+ to 0.94 lb 13.44+ to 15.04 oz	0.040	5/8	381+ to 426	18
0.94+ to 1.08 lb 15.04+ to 17.28 oz	0.044	11/16	426+ to 490	20
1.08+ to 1.26 lb	0.048	3/4	490+ to 572	22
1.26+ to 1.40 lb	0.052	13/16	572+ to 635	24
1.40+ to 1.54 lb	0.056	7/8	635+ to 698	25
1.54+ to 1.70 lb	0.060	15/16	698+ to 771	27

<sup>a</sup>Applies only to shortages in package weight (that is, the MAV is compared with minus package errors only)

<sup>b</sup>0.08+ means "greater than 0.08"

<sup>c</sup>"to" means "to and including"

Table 2-8. (continued) MAV's for an individual package labeled by weight.

Avoirdupois units			Metric units	
Labeled weight	MAV		Labeled weight	MAV
Pounds	Decimal pounds	Fractional ounces	Grams or kilograms	Grams
1.70+ to 1.88	0.064	1	771+ to 852	29
1.88+ to 2.14	0.070	1 1/8	852+ to 971	32
2.14+ to 2.48	0.078	1 1/4	971+ to 1.125	35
2.48+ to 2.76	0.086	1 3/8	1.125+ to 1.350	40
2.76+ to 3.20	0.094	1 1/2	1.350+ to 1.600	45
3.20+ to 3.90	0.11	1 3/4	1.600+ to 1.800	50
3.90+ to 4.70	0.12	2	1.800+ to 2.100	55
4.70+ to 5.80	0.14	2 1/4	2.100+ to 2.640	65
5.80+ to 6.80	0.15	2 1/2	2.640+ to 3.080	70
6.80+ to 7.90	0.17	2 3/4	3.080+ to 3.800	80
7.90+ to 9.40	0.19	3	3.800+ to 4.400	85
9.40+ to 11.70	0.22	3 1/2	4.400+ to 5.200	100
11.70+ to 14.30	0.25	4	5.200+ to 6.800	115
14.30+ to 17.70	0.28	4 1/2	6.800+ to 8.20	130
17.70+ to 23.20	0.31	5	8.20+ to 10.60	145
23.20+ to 31.60	0.37	6	10.60+ to 14.30	170
31.60+ to 42.40	0.44	7	14.30+ to 19.25	200
42.40+ to 54.40	0.50	8	19.25+ to 24.70	230
54.40+	2% of labeled weight		24.70+	2% of labeled weight

Table 2-9. MAV's for an individual package labeled by volume - liquid or dry<sup>a</sup>.

Inch-Pound				Metric	
Labeled quantity	Liquid MAV (fl oz)	Labeled quantity	Dry MAV (cu in)	Labeled quantity	Liquid and dry MAV (mL)
up to and including 0.50 fl oz	b	up to and including 0.18 cu in	0.03	up to and including 3 mL	0.5 <sup>c</sup>
		0.18+ to 0.49 cu in	0.06	3+ to 8 mL	1.0 <sup>c</sup>
		0.49+ to 0.92 cu in	0.09	8+ to 15 mL	1.5 <sup>c</sup>
0.50+ <sup>d</sup> to 0.75 fl oz	0.06	0.92+ to 1.35 cu in	0.11	15+ to 22 mL	2.0
0.75+ to 2.25 fl oz	0.13	1.35+ to 4.06 cu in	0.23	22+ to 67 mL	3.5
2.25+ to 4.25 fl oz	0.19	4.06+ to 7.67 cu in	0.34	67+ to 126 mL	5.5
4.25+ to 5.75 fl oz	0.25	7.67+ to 10.38 cu in	0.45	126+ to 170 mL	7.5
5.75+ to 7.50 fl oz	0.31	10.38+ to 13.54 cu in	0.56	170+ to 222 mL	9
7.50+ to 11.75 fl oz	0.38	13.54+ to 21.21 cu in	0.68	222+ to 347 mL	11
11.75+ to 17.00 fl oz	0.50	21.21+ to 30.68 cu in	0.90	347+ to 503 mL	15
17.00+ to 21.00 fl oz	0.63	30.68+ to 37.90 cu in	1.13	503+ to 621 mL	18
21.00+ to 27.00 fl oz	0.75	37.90+ to 48.73 cu in	1.35	621+ to 798 mL	22
Liquid Measure Equivalents					
1 pint = 16 fl oz					
1 quart = 32 fl oz					
1 gallon = 128 fl oz					

<sup>a</sup>Applies to shortages in package volume (that is, minus package errors).

<sup>b</sup>Convert to metric units and use laboratory glassware.

<sup>c</sup>Use laboratory glassware.

<sup>d</sup>0.50+ means "greater than 0.50."

<sup>e</sup>"to" means "to and including."

Table 2-9 (continued). MAV's for an individual package labeled by volume - liquid or dry.

Inch-Pound			Metric	
Labeled quantity	Liquid MAV (fl oz)	Labeled quantity	Dry MAV (cu in)	Liquid and dry (HAV) (ml.)
27.00+ to 31.00 fl oz	0.88	48.73+ to 55.95 cu in	1.58	798+ to 917 mL
31.00+ to 39.00 fl oz	1.00	55.95+ to 70.38 cu in	1.80	917+ mL to 1.153 L
39.00+ to 55.00 fl oz	1.25	70.38+ to 99.26 cu in	2.26	1.153+ to 1.627 L
55.00+ to 69.00 fl oz	1.50	99.26+ to 124.5 cu in	2.71	1.627+ to 2.041 L
69.00+ to 85.00 fl oz	1.75	124.5+ to 153.4 cu in	3.2	2.041+ to 2.514 L
85.00+ to 103.00 fl oz	2.0	153.4+ to 185.9 cu in	3.6	2.514+ to 3.046 L
103.00+ to 160 fl oz (1.25 gal)	2.5	185.9+ to 288.8 cu in	4.5	3.046+ to 4.732 L
160+ to 185.6 fl oz	3.0	288.8+ to 335.0 cu in	5.4	4.732+ to 5.489 L
185.6+ to 240 fl oz	3.5	335.0+ to 433.1 cu in	6.3	5.489+ to 7.098 L
240+ to 272 fl oz	4.0	433.1+ to 490.9 cu in	7.2	7.098+ to 8.044 L
272+ to 344 fl oz	4.5	490.9+ to 620.8 cu in	8.1	8.044+ to 10.173
344+ to 392 fl oz	5.0	620.8+ to 707.4 cu in	9.0	10.173+ to 11.593
392+ to 560 fl oz	6.0	707.4+ to 1011 cu in	10.8	11.593+ to 16.561
560+ to 640 fl oz	7.0	1011+ to 1155 cu in	12.6	16.561+ to 18.927
640+ to 800 fl oz	8.0	1155+ to 1444 cu in	14.4	18.927+ to 23.659
800+ to 904 fl oz	9.0	1444+ to 1631 cu in	16.2	23.659+ to 26.734
Over 904 fl oz	1% of labeled volume	Over 1631 cu in	1% of labeled volume	Over 26.734 L
See Section 2-13 for exception: bark mulch		Dry Measure Equivalent 1 Dry Pint = 33.6003125 cu in 1 Bushel = 2150.42 cu in 1 Dry Quart = 67.200625 cu in 1 cu ft = 1728 cu in		

Table 2-9. MAV's for an individual package labeled by volume - liquid or dry<sup>a</sup>.

Inch-Pound				Metric	
Labeled quantity	Liquid MAV (fl oz)	Labeled quantity	Dry MAV (cu in)	Labeled quantity	Liquid and dry MAV (mL)
up to and including 0.50 fl oz	b	up to and including 0.18 cu in	0.03	up to and including 3 mL	0.5 <sup>c</sup>
		0.18+ to 0.49 cu in	0.06	3+ to 8 mL	1.0 <sup>c</sup>
		0.49+ to 0.92 cu in	0.09	8+ to 15 mL	1.5 <sup>c</sup>
0.50+ <sup>d</sup> to 0.75 fl oz	0.06	0.92+ to 1.35 cu in	0.11	15+ to 22 mL	2.0
0.75+ to 2.25 fl oz	0.13	1.35+ to 4.06 cu in	0.23	22+ to 67 mL	3.5
2.25+ to 4.25 fl oz	0.19	4.06+ to 7.67 cu in	0.34	67+ to 126 mL	5.5
4.25+ to 5.75 fl oz	0.25	7.67+ to 10.38 cu in	0.45	126+ to 170 mL	7.5
5.75+ to 7.50 fl oz	0.31	10.38+ to 13.54 cu in	0.56	170+ to 222 mL	9
7.50+ to 11.75 fl oz	0.38	13.54+ to 21.21 cu in	0.68	222+ to 347 mL	11
11.75+ to 17.00 fl oz	0.50	21.21+ to 30.68 cu in	0.90	347+ to 503 mL	15
17.00+ to 21.00 fl oz	0.63	30.68+ to 37.90 cu in	1.13	503+ to 621 mL	18
21.00+ to 27.00 fl oz	0.75	37.90+ to 48.73 cu in	1.35	621+ to 798 mL	22
Liquid Measure Equivalents					
1 pint = 16 fl oz					
1 quart = 32 fl oz					
1 gallon = 128 fl oz					

<sup>a</sup>Applies to shortages in package volume (that is, minus package errors).<sup>b</sup>Convert to metric units and use laboratory glassware.<sup>c</sup>Use laboratory glassware.<sup>d</sup>0.50+ means "greater than 0.50."<sup>e</sup>"to" means "to and including."



Table 2-9 (continued). MAV's for an individual package labeled by volume - liquid or dry.

Inch-Pound				Metric	
Labeled quantity	Liquid MAV (fl oz)	Labeled quantity	Dry MAV (cu in)	Labeled quantity	Liquid and dry (MAV) (ml.)
27.00+ to 31.00 fl oz	0.88	48.73+ to 55.95 cu in	1.58	798+ to 917 mL	26
31.00+ to 39.00 fl oz	1.00	55.95+ to 70.38 cu in	1.80	917+ mL to 1.153 L	30
39.00+ to 55.00 fl oz	1.25	70.38+ to 99.26 cu in	2.26	1.153+ to 1.627 L	37
55.00+ to 69.00 fl oz	1.50	99.26+ to 124.5 cu in	2.71	1.627+ to 2.041 L	44
69.00+ to 85.00 fl oz	1.75	124.5+ to 153.4 cu in	3.2	2.041+ to 2.514 L	52
85.00+ to 103.00 fl oz	2.0	153.4+ to 185.9 cu in	3.6	2.514+ to 3.046 L	59
103.00+ to 160 fl oz (1.25 gal)	2.5	185.9+ to 288.8 cu in	4.5	3.046+ to 4.732 L	74
160+ to 185.6 fl oz	3.0	288.8+ to 335.0 cu in	5.4	4.732+ to 5.489 L	89
185.6+ to 240 fl oz	3.5	335.0+ to 433.1 cu in	6.3	5.489+ to 7.098 L	104
240+ to 272 fl oz	4.0	433.1+ to 490.9 cu in	7.2	7.098+ to 8.044 L	118
272+ to 344 fl oz	4.5	490.9+ to 620.8 cu in	8.1	8.044+ to 10.173	133
344+ to 392 fl oz	5.0	620.8+ to 707.4 cu in	9.0	10.173+ to 11.593	148
392+ to 560 fl oz	6.0	707.4+ to 1011 cu in	10.8	11.593+ to 16.561	177
560+ to 640 fl oz	7.0	1011+ to 1155 cu in	12.6	16.561+ to 18.927	207
640+ to 800 fl oz	8.0	1155+ to 1444 cu in	14.4	18.927+ to 23.659	237
800+ to 904 fl oz	9.0	1444+ to 1631 cu in	16.2	23.659+ to 26.734	266
Over 904 fl oz	1% of labeled volume	Over 1631 cu in	1% of labeled volume	Over 26.734 L	1% of labeled volume
See Section 2-13 for exception: bark mulch		Dry Measure Equivalent			
		1 Dry Pint = 33.6003125 cu in    1 Bushel = 2150.42 cu in 1 Dry Quart = 67.200625 cu in    1 cu ft = 1728 cu in			

Table 2-10. MAV's for an individual package labeled by count<sup>a</sup>.

Labeled count	MAV
up to and including 17 <sup>b</sup>	0
18-50 <sup>b</sup>	1
51-83	2
84-116	3
117-150	4
151-200	5
201-240	6
241-290	7
291-345	8
346-400	9
401-465	10
466-540	11
541-625	12
626-725	13
726-815	14
816-900	15
901-990	16
991-1075	17
1076-1165	18
1166-1250	19
1251-1333	20
1334 and over	1.5% of labeled count rounded off to the nearest whole number

<sup>a</sup>Applies only to shortages in package count (that is, minus package errors).

<sup>b</sup>See Section 5.2. for sampling plans to be used with these package sizes.

**Table 2.11. MAV's for an individual package labeled by length (width) or by area<sup>a</sup>**

Length		
Inch-Pound Labeled Length yards	MAV (expressed as a percentage of the labeled length)	Metric Labeled length meters
Up to and including 1	3%	Up to and including 1
1 <sup>b</sup> to <sup>c</sup> 48	1.5%	1+ to 40
48+ to 96	2%	40+ to 85
96+ to 154	2.5%	85+ to 140
154+ to 330	3%	140+ to 300
330+ to 1100	4%	300+ to 1000
1100+	5%	1000+
Area		
The MAV for packages labeled by area is 3% of the labeled area.		

<sup>a</sup>Applies only to shortages in package measure (that is, minus package errors).

<sup>b</sup>1+ means greater than 1

<sup>c</sup>"to" means "to and including"

See Section 2.13. for exceptions: textiles, polyethylene sheeting.



**Table 2-12. U.S. Department of Agriculture, Meat and Poultry,  
Groups and Lower Limits for individual packages\***

Group Name	Definition of Group (numbers are labeled weight in ounces)		Lower Limit for Individual Weights
	Homogeneous, Fluid When Filled	All Other Products	
A	less than 3		10 % of labeled weight
1	3-16	-	7.1 g 0.25 oz 8/32 oz 4/16 oz 2/10 oz 2/8 oz 1/4 oz
2	over 16	3-7	14.2 g 0.50 oz 16/32 oz 8/16 oz 5/10 oz 4/8 oz 2/4 oz
3	-	over 7 to 48	28.3 g 1 oz
4	-	over 48 to 160	42.5 g 1.50 oz 1 16/32 oz 1 8/16 oz 1 5/10 oz 1 4/8 oz 1 2/4 oz
5	1	over 160	2 oz 1/4 lb

\*See also Appendix J.



## SECTION 6. REPORT FORMS AND WORKSHEETS

This section contains:

- o A table referring to locations on the report form and where to obtain further information in H-133.
- o Standard Pack Report Form
- o Standard Pack Report Form - Weight Only
- o Random Pack Report Form
- o Worksheet for Packages Labeled by Liquid Volume
- o Worksheet for Packages Labeled by Count
- o Worksheet for Checking Paint
- o Table 4-4. Thickness of Paint Can Walls and labels
- o Worksheet for Checking Polyethylene Sheeting



**Table 2-1. Guide to locations on the report form for  
standard pack packages on page 55**

Box	Subject	Section	Handbook 133 Page
1	Labeled Contents	2.2.1.	2-2
2	Unit of Measure	2.9.1.	2-16
3	Maximum Allowable Variation (MAV)	2.12.	2-27 & B-9 to B-15
4	MAV (dimensionless units)	2.9.1.	2-16
5	Lot Size (N)	2.3.3	2-8
6	Sample Size (n)	2.6., 2.7.	2-9, 2-14
7	Tare Sample Size ( $n_t$ )	2.6., 2.7., 2.11.4.	2-9, 2-14, 2-23
8	Allowed Number of Unreasonable Errors	2.6.1., 2.7.1.	2-10, 2-14
9	Range of Net Weights ( $R_c$ )	2.11.4.	2-25
10	Range of Tare Weights ( $R_t$ )	2.11.4.	2-25
11	$R_c + R_t$	2.11.4.	2-25
12	$n_t$ from Table 2-7	2.11.4.	2-25
13	Average Tare	2.11., 2.11.3., 2.11.4	2-20, 2-23, 2-26
13a	Tare Correction	moisture 2.14., foam 3.11.6., vacuum pack 3.15.	2-29 3-37 3-42
14	Nominal Gross Weight	3.5.	3-7
15	Total Package Error	2.9.3.	2-18
16	Actual Number of Unreasonable Errors	2.6.1., 2.7.1	2-10, 2-14
17	Decision on Unreasonables	2.6.1., 2.7.1.	2-10, 2-14
18	Average Error (dimensionless units)	2.6.2., 2.7.2.	2-11, 2-15
19	Average Error (labeled units)	2.6.2., 2.7.2.	2-11, 2-15
20	Decision on Average	2.6.2., 2.7.2.	2-11, 2-15
21	Average Range	2.6.2., Appendix H	2-11, H-1
22	Value from Table 2-3, column 2	2.6.2.	2-12
23	d	2.6.2.	2-12
24	$(n/N) \times 100$	2.6.2.	2-13
25	f	2.6.2.	2-13, B-4
26	T	2.6.2.	2-13
27	Decision on Average (for Cat. A only)	2.6.2.	2-14
28	Disposition of Lot	Summary of boxes 17, 20, 27	2-4



DATE \_\_\_\_\_

## STANDARD PACK REPORT FORM

REPORT NUMBER

Location of TEST (Name, Address)	<input type="checkbox"/> Retailer <input type="checkbox"/> Wholesaler <input type="checkbox"/> Packager	PRODUCT IDENTITY	BRAND	LOT CODE(S)	CONTAINER DESCRIPTION
		<div>1</div> <div>LABELLED CONTENTS</div>	<div>2</div> <div>UNIT OF MEASURE</div> <div> <input type="checkbox"/> lb.  <input type="checkbox"/> oz.           </div>	<div>3</div> <div>MAV (same units as label)</div> <div>See Worksheet</div>	<div>4</div> <div>MAV (dimensionless units)</div> <div>See Worksheet</div>

5	LOT SIZE (N)
6	SAMPLE SIZE (n) <input type="checkbox"/> A (p. 20) <input type="checkbox"/> B (p. 19)
7	TARE SAMPLE SIZE <input type="checkbox"/> Alternative (p. 29)
8	Allowed Number UNREASONABLE ERRORS

This report form is designed for standard packages *not* labeled by weight: for example, liquid volume, count, area, etc.

Fill out report form heading, boxes **1** & **2**, and boxes **5** through **8**.

Go to appropriate worksheets, follow directions on the worksheet, recording data on the report form as directed by the worksheet.

9	$R_C$ (See Worksheet)	10	$R_T$ (See Worksheet)	11	$R_C \div R_T$	12	$n_i$ (Table 2-7 p. 30&31)	13	AVERAGE TARE	14	NOMINAL GROSS WEIGHT
	Range of Net Weights		Range of Tare Weights		<div style="border: 1px solid black; padding: 2px; display: inline-block;">9</div> $\div$ <div style="border: 1px solid black; padding: 2px; display: inline-block;">10</div> =				See Worksheet		See Worksheet

## PACKAGE ERRORS

TOTALS

(-)

## RANGES

15	TOTAL ERROR
----	-------------

16 NO. UNREASONABLE MINUS ERRORS (Compare with box 4)	17 IS 16 Greater than <input type="checkbox"/> YES: LOT FAILS <input type="checkbox"/> NO—CONTINUE	18 AVERAGE ERROR (Dimensionless Units) 15 + 6 =	19 AVERAGE ERROR (labeled units) See Worksheet	20 IS 18 ZERO OR PLUS? <input type="checkbox"/> NO → Cat. B, LOT FAILS <input type="checkbox"/> YES → GO TO 28	21 Cat. A, go to 21
21 AVERAGE RANGE	22 Use 6 to look up value in Table 2-3, Col. 2 (p. 20)	23 $d = 21 \times 22 =$	24 $(n/N) \times 100 =$ $((6) \div (5)) \times 100 =$	25 Use 24 to look up f in Table 2-4 (p. 21) f =	26 $T = 23 \times 25 =$
27 Disregarding the signs, is 18 larger than 26? <input type="checkbox"/> YES → LOT FAILS <input type="checkbox"/> NO → LOT PASSES					

**Comments:**

28	DISPOSITION OF LOT:
	<input type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED

### Acknowledged Receipt of Report

Official





DATE \_\_\_\_\_

## STANDARD PACK REPORT FORM WEIGHT ONLY

REPORT NUMBER

Location of TEST (Name, Address)		PRODUCT IDENTITY		BRAND		LOT CODE(S)		CONTAINER DESCRIPTION	
		1	2	3	4				
<input type="checkbox"/> Retailer <input type="checkbox"/> Wholesaler <input type="checkbox"/> Packager		LABELLED WEIGHT	UNIT OF MEASURE	MAV Table 2-8 p. 41 & 42	MAV (dimensionless units)				
			lb. oz.		$3 \div 2 =$				
5	LOT SIZE (N)	a	GROSS WEIGHT						
6	SAMPLE SIZE (n) <input type="checkbox"/> A (p. 20) <input type="checkbox"/> B (p. 19)	b	TARE WEIGHT						
		c	NET WEIGHT						
7	TARE SAMPLE SIZE <input type="checkbox"/> Alternative (p. 29)	d	PACKAGE ERROR						
		a	- 14						
8	Allowed Number UNREASONABLE ERRORS	e	PACKAGE ERROR (dimensionless units)						
		d	$\div 2$						
9	$R_C$ (see $c$ ) Range of Net Weights	10	$R_T$ (see $b$ ) Range of TARE Weights	11	$R_C \div R_T =$ $9 \div 10 =$	12	$n_i$ (Table 2-7, p. 30 & 31)	13	AVERAGE TARE <input type="checkbox"/> dry <input type="checkbox"/> wet <input type="checkbox"/> alternative
				13a	TARE CORRECTION <input type="checkbox"/> Moisture <input type="checkbox"/> Foam (p. 32) <input type="checkbox"/> Vacuum Pack	14			
						NOMINAL GROSS WEIGHT $1 + 13 - 13a =$			

## PACKAGE ERRORS

TOTALS

(-)

[illegible]

16 NO. UNREASONABLE MINUS ERRORS (Compare with box 4)	17 IS 16 Greater than 8 <input type="checkbox"/> YES: LOT FAILS <input type="checkbox"/> NO—CONTINUE	18 AVERAGE ERROR (Dimensionless Units) 15 ÷ 6 =	19 AVERAGE ERROR (labeled units) 18 × 2 =	20 IS 18 ZERO OR PLUS? <input type="checkbox"/> NO → Cat B, LOT FAILS <input type="checkbox"/> Cat A, go to 21 <input type="checkbox"/> YES → GO TO 28
21 AVERAGE RANGE	22 Use 6 to look up value in Table 2-3, Col. 2 (p. 20)	23 d = 21 × 22 =	24 (n/N) × 100 = (6 ÷ 5) × 100 =	25 Use 24 to look up f in Table 2-4 (p. 21) f =
26 T = 23 × 25 =				
27 Disregarding the signs, is 18 larger than 26?    YES → LOT FAILS    NO → LOT PASSES				

Comments:

28	DISPOSITION OF LOT:
----	---------------------

☐ APPROVED  
☐ REJECTED

### Acknowledged Receipt of Report

Official



DATE \_\_\_\_\_

## RANDOM PACK REPORT FORM

(Page 1 of 2)

REPORT NUMBER

LOCATION OF TEST (Name, Address) <input type="checkbox"/> Retailer <input type="checkbox"/> Wholesaler <input type="checkbox"/> Packager		1 LOT SIZE (N)		2 SAMPLE SIZE (n) <input type="checkbox"/> A (p. 20) <input type="checkbox"/> B (p. 19)		3 TARE SAMPLE SIZE <input type="checkbox"/> alternative (p. 29)		4 ALLOWED NUMBER OF UNREASONABLE ERRORS							
		5 UNIT OF MEASURE (size of scale div.) <input type="checkbox"/> lb <input type="checkbox"/> oz													
7 PRODUCT DESCRIPTION, LOT CODE UNIT PRICE		8 LABELED WEIGHT		9 PACKAGE ERROR - 0/+		10 MAV (Weight) (p. 41 & 42)		11 MAV (dimensionless) 10 ÷ 5		<div style="background-color: #cccccc; width: 40px; height: 20px; display: flex; align-items: center; justify-content: center;"> <div style="width: 10px; height: 10px; background-color: black;"></div> </div>		PACKAGE 1		PACKAGE 2	
										TARE 1					
										6 AVERAGE TARE					
										TARE 2					
										6 AVERAGE TARE					
										TARE 3					
										6 AVERAGE TARE					
										TARE 4					
										6 AVERAGE TARE					
												LOT DISPOSITION (B only; see page 2 for A)			
												14 IS 13 GREATER THAN ZERO?			
												<input type="checkbox"/> YES → LOT FAILS <input type="checkbox"/> NO → CONTINUE			
												15 AVERAGE ERROR = TOTAL ERROR ÷ NO. OF PACKAGES			
												= 12 ÷ 2 =			
												16 AVERAGE ERROR = AVERAGE ERROR in units of weight ÷ UNIT OF MEASURE			
												= 15 ÷ 5 =			
												17 IS AVERAGE ERROR 0/+ ?			
												<input type="checkbox"/> YES → GO TO 18 <input type="checkbox"/> NO → LOT FAILS			
												18 <input type="checkbox"/> LOT ACCEPTED <input type="checkbox"/> LOT REJECTED			
												COMMENTS:			

### Acknowledged Receipt of Report

Official

## RANDOM PACK REPORT FORM

Page 2 of 2

REPORT NUMBER

## ALTERNATIVE TARE CALCULATIONS:

a	GROSS WEIGHT					
b	TARE WEIGHT					6b $R_T =$
c	NET WEIGHT					6a $R_C =$
d	PACKAGE ERROR $a - 6e - 8$					6c $R_C \div R_T =$ $8a \div 6b$
e	PACKAGE ERROR (in scale div) $d \div 5$					6d $n_t$ (Table 2-7 p. 30)
Additional Tare weights:	GROSS WT					6e AVERAGE TARE
	TARE WT					

## LOT DISPOSITION CATEGORY A

NOTE: PACKAGES SHOULD NOT BE ARRANGED FROM LIGHTEST TO HEAVIEST WHEN FOLLOWING A

19	<p>ON PAGE 1, THE NUMBER OF MINUS PACKAGE ERRORS EXCEEDING THE MAV IS RECORDED IN BOX 13</p> <p>BOX 4 CONTAINS THE ALLOWED NUMBER.</p> <p>IS 13 Greater than 4 ?</p> <p>YES → LOT FAILS. RECORD DISPOSITION IN BOX 18 PAGE 1</p> <p>NO → GO TO 20</p>	20	<p>AVERAGE ERROR (Scale div)</p> <p>= TOTAL ERROR ÷ NO. OF PACKAGES</p> <p>= 12 ÷ 2</p>	21	<p>AVERAGE ERROR in units of weight</p> <p>= AVERAGE ERROR in no. of scale div. × UNIT OF MEASURE</p> <p>= 20 × 5</p>	22	<p>IS 20 MINUS?</p> <p>1) NO → RECORD DISPOSITION IN BOX 18, PAGE 1</p> <p>2) YES → GO TO 23</p>
23	<p>GROUP</p> <p>RANGE OF PACKAGE ERRORS FOR EACH GROUP OF 5 PACKAGES</p>	25	<p>TABLE 2-3 Col. 2 value (page 20)</p>	28	<p><math>d = 24 \times 25</math></p> <p>=</p>	27	<p><math>(n/N) \times 100 =</math></p> <p><math>(2 + 1) \times 100 =</math></p>
1		28	<p>Use 27 to look up f in Table 2-4 (page 21) f =</p>	29	<p><math>T = 26 \times 28</math></p> <p>=</p>		
2							
3							
4							
5							
6							
7							
8							
9							
10							
24	<p>AVERAGE = SUM OF ÷ NO. OF GROUPS</p> <p><math>\bar{R} =</math></p>		<p>DISREGARDING THE SIGNS, IS 20 larger than 29 ?</p> <p>1) YES → LOT FAILS</p> <p>2) NO → RECORD DISPOSITION IN BOX 18, PAGE 1</p>				
			Record final lot disposition on page 1 in box 18				

# WORKSHEET FOR PACKAGES LABELED BY LIQUID VOLUME

NUMBERS WITH BOXES (e.g. 3) REFER TO REPORT FORM (page 53)  
STEP NUMBERS (e.g. STEP 5) REFER TO WORKSHEET

Fill out report form up through box 8, skip boxes 3 and 4.

		(1st Pkg)	(2nd Pkg)	(3rd)	(4th)	(5th)
1. Gross Weight						
2. Tare Weight	*R <sub>T</sub> =					
Net Weight	*R <sub>C</sub> =					
3. Flask Weight (full)						
4. Flask Weight (empty, wetted)						
5. Weight of Liquid (Step 3 – Step 4)						
6. Volume of Flask						
7. Temperature of Liquid						

8. Do the weights recorded in Step 5 differ from each other by more than the value in Table 4-3 (page 38)?

YES ! ! If this box is checked, open all packages in sample and determine each package error by volume (see Section 4.6).

NO ! ! If this box is checked, continue below.

9. AVERAGE WEIGHT OF LIQUID IN FLASK = AVERAGE OF STEP 5 =

10. AVERAGE WEIGHT OF LABELED VOLUME =  $\frac{\text{LABELED VOLUME}}{\text{FLASK VOLUME}} \times \text{AVG. WEIGHT OF LIQUID IN FLASK}$

=  $\frac{\text{box } \span style="border: 1px solid black; padding: 0 2px;">1}{\text{Step 6}} \times \text{Step 9} =$

\* 11. (R<sub>C</sub>/R<sub>T</sub> = \_\_\_\_\_) (n<sub>t</sub> = \_\_\_\_\_)<sup>†</sup> See Table 2-7 (pages 30 & 31)

12. AVERAGE TARE = AVERAGE OF STEP 2 (or average of Step 2 and additional tares)\*

=  Record in box 13 on report form

\* Alternative Tare procedure for liquids packed in glass.

† If additional packages are opened for tare, provision should be made for recording all pertinent data.

$$13. \text{NOMINAL GROSS WEIGHT} = \frac{\text{AVERAGE TARE}}{\text{AVERAGE WEIGHT OF LABELED VOLUME}} + \text{AVERAGE WEIGHT OF LABELED VOLUME}$$

$$= \text{Step 12} + \text{Step 10} = \boxed{\phantom{000000}}$$

Record in box 14 on report form

14. For packages opened for Tare:

$$\text{PACKAGE ERROR (weight)} = \text{GROSS WEIGHT} - \text{NOMINAL GROSS WEIGHT}$$

$$= \text{Step 1} - \text{Step 13}$$

$$= \boxed{\phantom{00}}^1 \boxed{\phantom{00}}^2 \boxed{\phantom{00}}^3 \boxed{\phantom{00}}^4 \boxed{\phantom{00}}^5$$

$$15. \text{PACKAGE ERROR (dimensionless units)} = \text{PACKAGE ERROR (weight)} \div \text{UNIT OF MEASURE}$$

$$= \text{Step 14} \div \text{box } \boxed{2}$$

$$= \boxed{\phantom{00}}^1 \boxed{\phantom{00}}^2 \boxed{\phantom{00}}^3 \boxed{\phantom{00}}^4 \boxed{\phantom{00}}^5$$

Record package errors on report form in crosshatched area.

$$16. \text{MAV (volume)} \text{ from Table 2-9 (pages 43 \& 44)} = \boxed{\phantom{000000}}$$

Record in box 3 on report form.

$$17. \text{MAV (weight)} = \frac{\text{MAV (volume)} \times \text{AVERAGE WEIGHT OF LABELED VOLUME}}{\text{LABELED VOLUME}}$$

$$= \text{Step 16} \times \frac{\text{Step 10}}{\text{box } \boxed{1}} = \boxed{\phantom{000000}}$$

$$18. \text{MAV (dimensionless units)} = \frac{\text{MAV (weight)}}{\text{UNIT OF MEASURE}}$$

$$= \text{Step 17} \div \text{box } \boxed{2} = \boxed{\phantom{000000}} \quad \text{Record in box } \boxed{4} \text{ on report form}$$

19. Compare unopened packages with nominal gross weight (Step 13, box 14).

Record package error for remaining packages in sample directly on report form in crosshatched area.

Compare minus package error with MAV (Step 18, box 4).

Average package error (box 18). Convert back to units of volume as given below:

$$\text{AVERAGE PACKAGE ERROR (volume)} = \frac{\text{AVG. PACKAGE ERROR (dimensionless units)} \times \text{UNIT OF MEASURE} \times \text{LABELED VOLUME}}{\text{AVG. WEIGHT OF LABELED VOLUME}}$$

$$= \text{box } \boxed{18} \times \text{box } \boxed{2} \times \frac{\text{box } \boxed{1}}{\text{Step 10}}$$

$$= \boxed{\phantom{000000}} \quad \text{Record in box } \boxed{19} \text{ on report form}$$

(Boxes above with "3", "4", "5" in corners are for larger tare sample sizes.)



# WORKSHEET FOR PACKAGES LABELED BY COUNT

NUMBERS WITH BOXES (e.g. **3**) REFER TO REPORT FORM (page 53)

STEP NUMBERS (e.g. "Step 5") REFER TO WORKSHEET

Fill out report form through box **8**, skip boxes **3** and **4**

	(1st Pkg)	(2nd Pkg)	(3rd)	(4th)	(5th)
1. Gross Weight					
2. Tare Weight					
3. Count in Each Package					
4. Weight of Counted Items					
5. Weight of Labeled Count					
$= \frac{\text{Labeled Count}}{\text{Count}} \times \frac{\text{Step 4}}{\text{Step 3}} =$					

6. MAV from Table 2-10 (count) (page 45)

=

Record in box **3** on the report form

7. MAV/6 (weight) = MAV/6 (count)  $\times \frac{\text{WEIGHT OF COUNTED ITEMS}}{\text{COUNT IN PACKAGE}}$

=  $\frac{\text{Step 6}}{6} \times \frac{\text{Step 4 (for first package)}}{\text{Step 3 (for first package)}}$  =

8. If using an equal-arm package checking scale, is value calculated in Step 7 equal to or larger than  $\frac{1}{2}$  the smallest graduation?

If using an electronic package checking scale, is value calculated in Step 7 at least as large as the smallest increment?

NO ☐ If this box is checked, open all packages in sample and determine each package error by actually counting the items inside the packages.

YES ☐ If this box is checked, continue below.

9. Do the weights recorded in Step 5 above differ from each other by more than the value in Table 4-3 (page 38)?

YES ☐ If this box is checked, open all packages in sample and determine each package error by counting items inside packages.

NO ☐ Average Weight of Labeled Count = average of Step 5 =

10. AVERAGE TARE = AVERAGE OF STEP 2

=

Record in box **13** on report form

11. NOMINAL GROSS WEIGHT = AVERAGE TARE + AVERAGE WEIGHT OF LABELED COUNT

= Step 10 + Step 9 =

Record in box **14** on report form.

12. For packages opened for Tare:

$$\text{PACKAGE ERROR (weight)} = \text{GROSS WEIGHT} - \text{NOMINAL GROSS WEIGHT}$$

$$= \text{Step 1} - \text{Step 11}$$

$$= \begin{array}{|c|c|c|c|c|} \hline & 1 & 2 & 3 & 4 & 5 \\ \hline \end{array}$$

$$13. \text{ PACKAGE ERROR (dimensionless units)} = \text{PACKAGE ERROR (weight)} \div \text{UNIT OF MEASURE}$$

$$= \text{Step 12} \div \text{box } \boxed{2}$$

$$= \begin{array}{|c|c|c|c|c|} \hline & 1 & 2 & 3 & 4 & 5 \\ \hline \end{array}$$

Record these package errors on report form in crosshatched area.

$$14. \text{ MAV (weight)} = \text{MAV (count)} \times \frac{\text{AVERAGE WEIGHT OF LABELED COUNT}}{\text{LABELED COUNT}}$$

$$= \text{Step 6} \times \frac{\text{Step 9}}{\text{box } \boxed{1}} = \boxed{\phantom{000000}}$$

$$15. \text{ MAV (dimensionless units)} = \text{MAV (weight)} \div \text{UNIT OF MEASURE}$$

$$= \text{Step 14} \div \text{box } \boxed{2} = \boxed{\phantom{000000}} \text{ Record in box } \boxed{4} \text{ on report form}$$

16. Compare unopened packages with nominal gross weight (Step 11 or box  $\boxed{14}$ ).

Record package errors for remaining packages in sample directly on report form in crosshatched area.

Compare minus package errors with MAV (Step 15 or box  $\boxed{4}$ ).

Average package errors (box  $\boxed{18}$ ). Convert back to units of count as given below:

$$\text{AVERAGE PACKAGE ERROR (count)} = \text{AVG. PACKAGE ERROR (dimensionless units)} \times \text{UNIT OF MEASURE} \times \frac{\text{LABELED COUNT}}{\text{AVG. WEIGHT OF LABELED COUNT}}$$

$$= \text{box } \boxed{18} \times \text{box } \boxed{2} \times \frac{\text{box } \boxed{1}}{\text{Step 9}}$$

$$= \boxed{\phantom{000000}} \text{ Record in box } \boxed{19} \text{ on report form.}$$

(Boxes above with "3", "4", and "5" in corners are for larger tare sample sizes).

# WORKSHEET FOR CHECKING PAINT

## Audit

① Can Height	Can Diameter				⑥ Average Liquid Diameter	⑦ Average Liquid Level	⑧ Average Container Depth	⑨ Average Liquid Depth	⑩ Volume
	② Top	③ Middle	④ Bottom	⑤ Average					

1 cu. in. = 0.004329 gal.

$$\text{Volume } ⑩ = 0.7854 \times ⑥ \times ⑥ \times ⑨$$

1 cm<sup>3</sup> = 0.001 L

If volume in ⑩ is less than labeled volume, use possible violation procedures

## Possible Violation

① Label	② Gross Weight	③ Lid Weight Wet (-) Dry	④ Liquid Level	⑤ Tare	⑥ Water Volume	⑦ Net Weight = ② - ⑤	⑧ Weight of Label Volume = $\frac{⑦ \times ①}{⑥}$	⑨ Package Volume = ⑥ + $\left[ \frac{③}{⑦} \times ⑥ \right]$
						/		

**Table 4-4. Thickness of paint can walls and labels.**

Wall thickness			
Inch-pound		Metric	
can size	in	can size	mm
1 gal	0.010	4 L	0.25
1/2 gal	0.010	2 L	0.25
1 qt	0.009	1 L	0.23
1 pt	0.008	500 mL	0.23
		250 mL	0.20
Label thickness (paper) <sup>a</sup> (all can sizes)			
Inch-pound		Metric	
0.004 in		0.10 mm	

<sup>a</sup>The thickness of labels lithographed directly onto the container may be ignored.

## WORKSHEET FOR CHECKING POLYETHYLENE SHEETING

Labeled Length Labeled Width Labeled Thickness 

0.8 X Labeled Thickness  Compare with All Thickness Measurements

0.93 X Labeled Thickness  Compare with Average Package Thickness

Package	Length	Width	Thickness	Package	Length	Width	Thickness			
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										
Package Average										



## SECTION 7. EXAMPLES

This section contains worked examples of worksheets and report forms for commonly encountered packages. (The section does not appear in H-133.)

- o Category B, standard pack, labeled by weight, using an equal-arm package checking scale.
- o Category B, standard pack, labeled by weight, using an electronic scale.
- o Category A, standard pack, labeled by weight, using an equal-arm package checking scale.
- o Category B, standard pack, labeled by volume.
- o Category B, random pack.
- o Category B, standard pack, labeled by count.





DATE 8/2/85

STANDARD PACK REPORT FORM  
WEIGHT ONLY

REPORT NUMBER

15805

Location of TEST (Name, Address)

☒ Retailer  
☐ Wholesaler  
☐ Packager

PRODUCT IDENTITY

Sugar frosted  
flakes

BRAND

Krumpli

LOT CODE(S)

8101/8201/205

CONTAINER DESCRIPTION

cardboard box  
plastic liner

Stop 'N' Pop

1 LABELED WEIGHT

15oz (0.9375 lb)

2 UNIT OF MEASURE

0.002 ☒ lb.  
☐ oz.

3 MAV Table 2-8

p. 41 &amp; 42

0.040 lb

4 MAV (dimensionless

units)

3 ÷ 2 =  $\frac{0.040 \text{ lb}}{0.002 \text{ lb}} = 20$ 

5 LOT SIZE (N) 48	a GROSS WEIGHT 1.108 lb	1.124 lb			
6 SAMPLE SIZE (n) 10 <input type="checkbox"/> A (p. 20) <input checked="" type="checkbox"/> B (p. 19)	b TARE WEIGHT 0.184 lb	0.184 lb			
7 TARE SAMPLE SIZE 2 <input type="checkbox"/> Alternative (p. 29)	c NET WEIGHT (only used for alternative tare)				
8 Allowed Number UNREASONABLE ERRORS 0	d PACKAGE ERROR a - 14 -0.014	+0.002 lb			
	e PACKAGE ERROR (dimensionless units) d ÷ 2 -7	+1			
9 R <sub>C</sub> (see c) Range of Net Weights	10 R <sub>T</sub> (see b) Range of TARE Weights	11 R <sub>C</sub> ÷ R <sub>T</sub> = 9 ÷ 10 =	12 n <sub>i</sub> (Table 2-7, p. 30 & 31)	13 AVERAGE TARE <input type="checkbox"/> dry <input checked="" type="checkbox"/> wet <input type="checkbox"/> alternative 0.184 lb	13a TARE CORRECTION <input type="checkbox"/> Moisture <input type="checkbox"/> Foam (p. 32) <input type="checkbox"/> Vacuum Pack 0
					14 NOMINAL GROSS WEIGHT .9375 + .16 = 1 + 13 - 13a = 1.122 lb

## PACKAGE ERRORS

TOTALS

(-) (0/+)

7	7									14	
1	11									10	
8	14									22	
7	8										1
0	8									8	
RANGES										15 TOTAL ERROR -53	

16 NO. UNREASONABLE MINUS ERRORS (Compare with box 4) 0	17 IS 16 Greater than 8 <input type="checkbox"/> YES: LOT FAILS <input checked="" type="checkbox"/> NO—CONTINUE	18 AVERAGE ERROR (Dimensionless Units) 15 ÷ 6 = -5.3	19 AVERAGE ERROR (labeled units) 18 × 2 = -0.011 lb	20 IS 18 ZERO OR PLUS? <input checked="" type="checkbox"/> NO → Cat. B, LOT FAILS <input type="checkbox"/> Cat. A, go to 21 <input type="checkbox"/> YES → GO TO 28
21 AVERAGE RANGE	22 Use 6 to look up value in Table 2-3, Col. 2 (p. 20)	23 d = 21 × 22 =	24 (n/N) × 100 = (6 ÷ 5) × 100 =	25 Use 24 to look up f in Table 2-4 (p. 21) f =
27 Disregarding the signs, is 18 larger than 26? <input type="checkbox"/> YES → LOT FAILS <input type="checkbox"/> NO → LOT PASSES				

Comments:

28 DISPOSITION OF LOT:

☐ APPROVED  
☒ REJECTED

T. Deeman

Acknowledged Receipt of Report

Official

John Doe

John Doe

DATE 5/10/85

STANDARD PACK REPORT FORM  
WEIGHT ONLY

REPORT NUMBER

16004

Location of TEST (Name, Address)

☐ Retailer  
☐ Wholesaler  
☒ Packager
PRODUCT IDENTITY  
Semisweet  
chocolateBRAND  
Veri-richLOT CODE(S)  
4YBCONTAINER DESCRIPTION  
cardboard +  
8 indiv. paper wraps

Quality Foods

1 LABELED WEIGHT

8 oz (0.5 lb)

2 UNIT OF MEASURE

0.002

☒ lb.  
☐ oz.

3 MAV Table 2-8

p. 41 & 42  
0.028

4 MAV (dimensionless units)

3 ÷ 2 = 14

5 LOT SIZE (N)

90

a GROSS WEIGHT

0.544 lb

0.536 lb

b TARE WEIGHT

0.036 lb

0.040 lb

6 SAMPLE SIZE (n)

30

☒ A (p. 20)  
☐ B (p. 19)

c NET WEIGHT

(only used for alternative tare)

7 TARE SAMPLE SIZE

2

☐ Alternative (p. 29)

d PACKAGE ERROR

a - 14

+0.006 lb

-0.002 lb

8 Allowed Number UNREASONABLE ERRORS

1

e PACKAGE ERROR (dimensionless units)

d ÷ 2

+3

-1

9 R<sub>C</sub> (see c)

Range of Net Weights

10 R<sub>T</sub> (see b)

Range of TARE Weights

11 R<sub>C</sub> ÷ R<sub>T</sub> =

9 ÷ 10 =

12 n<sub>1</sub> (Table 2-7, p. 30 & 31)

13 AVERAGE TARE

☐ dry  
☒ wet  
☐ alternative

0.038 lb

13a TARE CORRECTION

☐ Moisture  
☐ Foam (p. 32)  
☐ Vacuum Pack

0

14 NOMINAL GROSS WEIGHT

0.038 + 0.500

1 + 13 - 13a = .538 lb

## PACKAGE ERRORS

TOTALS

(-) (0/+)

3 <sup>+</sup>	9	11	3	7	1						6	
1	7	1	5	3	7						24	
3	3	3	3	1	5						4	
1	(17)	5	3	3	1						16	
1	5	1	7	1	3						12	
RANGES	6	22	16	12	10	12					15 TOTAL ERROR	-30

16 NO. UNREASONABLE MINUS ERRORS

(Compare with box 4)

1

17 IS 16 Greater than 8

☐ YES: LOT FAILS  
☒ NO—CONTINUE

18 AVERAGE ERROR (Dimensionless Units)

15 ÷ 6 = -30/30 = -1

19 AVERAGE ERROR (labeled units)

18 × 2 = -0.002 lb

20 IS 18 ZERO OR PLUS?

☐ NO → Cat. B, LOT FAILS  
☒ YES → GO TO 28

21 AVERAGE RANGE

13

22 Use 6 to look up value in Table 2-3, Col. 2 (p. 20)

0.157

23 d = 21 × 22 =

2.041

24 (n/N) × 100 =

(6 ÷ 5) × 100 = 33

25 Use 24 to look up f in Table 2-4 (p. 21)

0.82

26 T = 23 × 25 =

1.674

27 Disregarding the signs, is 18 larger than 26? ☐ YES → LOT FAILS  
☒ NO → LOT PASSES

Comments:

28 DISPOSITION OF LOT.

☒ APPROVED  
☐ REJECTED

Mary Smith Rogers

Acknowledged Representative of Report

John Doe

Official



John Doe

# WORKSHEET FOR PACKAGES LABELED BY LIQUID VOLUME

NUMBERS WITH BOXES (e.g. 3) REFER TO REPORT FORM (page 53)  
STEP NUMBERS (e.g. STEP 5) REFER TO WORKSHEET

Fill out report form up through box 8, skip boxes 3 and 4.

	(1st Pkg)	(2nd Pkg)	(3rd)	(4th)	(5th)
1. Gross Weight	0.904 lb	0.899 lb			
2. Tare Weight	<sup>*R<sub>T</sub></sup> = 0.080 lb	0.081 lb			
Net Weight	<sup>*R<sub>C</sub></sup> = (only use for alternative tare)				
3. Flask Weight (full)	1.126 lb	1.125 lb			
4. Flask Weight (empty, wetted)	0.584 lb	0.584 lb			
5. Weight of Liquid (Step 3 – Step 4)	0.542 lb	0.541 lb			
6. Volume of Flask	8 fl oz	8 fl oz			
7. Temperature of Liquid	75°F	75°F			

8. Do the weights recorded in Step 5 differ from each other by more than the value in Table 4-3 (page 38)?

YES ☐ If this box is checked, open all packages in sample and determine each package error by volume (see Section 4.6.).

NO ☐ If this box is checked, continue below.

9. AVERAGE WEIGHT OF LIQUID IN FLASK = AVERAGE OF STEP 5 =

0.5415 lb

10. AVERAGE WEIGHT OF LABELED VOLUME =  $\frac{\text{LABELED VOLUME}}{\text{FLASK VOLUME}} \times \text{AVG. WEIGHT OF LIQUID IN FLASK}$

$$= \frac{\text{box } \boxed{1}}{\text{Step 6}} \times \text{Step 9} =$$

$$= \frac{12 \text{ fl oz}}{8 \text{ fl oz}} \times 0.5415 \text{ lb}$$

0.81225 lb

\*11. ( $R_C/R_T =$  \_\_\_\_\_) ( $n_t =$  \_\_\_\_\_) ‡

See Table 2-7 (pages 30 & 31)

← (alternative tare only)

12. AVERAGE TARE = AVERAGE OF STEP 2 (or average of Step 2 and additional tares)\*

=

0.0805 lb

Record in box 13 on report form

\*Alternative Tare procedure for liquids packed in glass.

‡If additional packages are opened for tare, provision should be made for recording all pertinent data.

$$13. \text{ NOMINAL GROSS WEIGHT} = \text{AVERAGE TARE} + \text{AVERAGE WEIGHT OF LABELED VOLUME}$$

$$= \text{Step 12} + \text{Step 10} = \boxed{0.893 \text{ lb}}$$

Record in box 14 on report form

14. For packages opened for Tare:

$$\text{PACKAGE ERROR (weight)} = \text{GROSS WEIGHT} - \text{NOMINAL GROSS WEIGHT}$$

$$= \text{Step 1} - \text{Step 13}$$

$$= \boxed{.904} - \boxed{.893}$$

$$= \boxed{+0.011 \text{ lb}}^1 \boxed{+0.006 \text{ lb}}^2 \boxed{\phantom{000}}^3 \boxed{\phantom{000}}^4 \boxed{\phantom{000}}^5$$

$$15. \text{ PACKAGE ERROR (dimensionless units)} = \text{PACKAGE ERROR (weight)} \div \text{UNIT OF MEASURE}$$

$$= \text{Step 14} \div \text{box 2}$$

$$= \boxed{.011 \text{ lb}} \div \boxed{.001 \text{ lb}} = \boxed{+11}^1 \boxed{+6}^2 \boxed{\phantom{000}}^3 \boxed{\phantom{000}}^4 \boxed{\phantom{000}}^5$$

Record package errors on report form in crosshatched area.

$$16. \text{ MAV (volume)} \text{ from Table 2-9} = \boxed{0.5 \text{ fl oz}}$$

Record in box 3 on report form.

$$17. \text{ MAV (weight)} = \text{MAV (volume)} \times \frac{\text{AVERAGE WEIGHT OF LABELED VOLUME}}{\text{LABELED VOLUME}}$$

$$= \text{Step 16} \times \frac{\text{Step 10}}{\text{box 1}} = \boxed{0.034 \text{ lb}}$$

$$= \boxed{0.5 \text{ fl oz}} \times \frac{\boxed{0.81225 \text{ lb}}}{\boxed{12 \text{ fl oz}}}$$

$$18. \text{ MAV (dimensionless units)} = \text{MAV (weight)} \div \text{UNIT OF MEASURE}$$

$$= \text{Step 17} \div \text{box 2} = \boxed{34}$$

Record in box 4 on report form

$$= \boxed{0.034 \text{ lb}} \div \boxed{0.001 \text{ lb}}$$

19. Compare unopened packages with nominal gross weight (Step 13, box 14).

Record package errors for remaining packages in sample directly on report form in crosshatched area.

Compare minus package errors with MAV (Step 18, box 4).

Average package errors (box 18). Convert back to units of volume as given below:

$$\text{AVERAGE PACKAGE ERROR (volume)} = \text{AVG. PACKAGE ERROR (dimensionless units)} \times \text{UNIT OF MEASURE} \times \frac{\text{LABELED VOLUME}}{\text{AVG. WEIGHT OF LABELED VOLUME}}$$

$$= \text{box 18} \times \text{box 2} \times \frac{\text{box 1}}{\text{Step 10}} = \boxed{5.8} \times \boxed{0.001 \text{ lb}} \times \frac{\boxed{12 \text{ fl oz}}}{\boxed{.812 \text{ lb}}}$$

$$= \boxed{0.0857 \text{ fl oz}}$$

Record in box 19 on report form



DATE 4/20/85		RANDOM PACK REPORT FORM (Page 1 of 2)						REPORT NUMBER <b>15401</b>	
LOCATION OF TEST (Name, Address)  <b>Quality Foods</b>		<input checked="" type="checkbox"/> Retailer <input type="checkbox"/> Wholesaler <input checked="" type="checkbox"/> Packager		1 LOT SIZE (N) <b>57</b>	2 SAMPLE SIZE (n) <b>10</b> <input type="checkbox"/> A (p. 20) <input checked="" type="checkbox"/> B (p. 19)	3 TARE SAMPLE SIZE <b>2</b> <input type="checkbox"/> alternative (p. 29)	4 ALLOWED NUMBER OF UNREASONABLE ERRORS <b>0</b>		
				5 UNIT OF MEASURE (size of scale div.) <b>0.002</b> <input checked="" type="checkbox"/> lb <input type="checkbox"/> oz		TARE <input checked="" type="checkbox"/> DRY <b>actual tare</b> <input type="checkbox"/> WET (page 2 for alternative)			
7 PRODUCT DESCRIPTION, LOT CODE UNIT PRICE		8 LABELED WEIGHT	9 PACKAGE ERROR - 0/+	10 MAV (Weight) (p. 41 & 42)	11 MAV (dimensionless) 10-5	PACKAGE 1      PACKAGE 2			
<b>brick cheese</b>		<b>0.47</b>	<b>4</b>		<b>14</b>	TARE 1			
<b>4/16/85</b>		<b>0.48</b>	<b>2</b>			6 AVERAGE TARE			
<b>\$3.99/lb</b>		<b>0.51</b>	<b>12</b>			TARE 2			
		<b>0.52</b>	<b>10</b>			6 AVERAGE TARE			
		<b>0.58</b>	<b>3</b>			TARE 3			
		<b>0.62</b>	<b>12</b>			6 AVERAGE TARE			
		<b>0.63</b>	<b>14</b>			TARE 4			
		<b>0.63</b>	<b>15</b>	<b>→ 16</b>		6 AVERAGE TARE			
		<b>0.82</b>	<b>2</b>			LOT DISPOSITION (B only; see page 2 for A)			
		<b>0.87</b>	<b>2</b>						
						14 IS 13 GREATER THAN ZERO? <input type="checkbox"/> YES → LOT FAILS <input checked="" type="checkbox"/> NO → CONTINUE			
						15 AVERAGE ERROR = TOTAL ERROR ÷ NO. OF PACKAGES = 12 ÷ 2 = -5			
						16 AVERAGE ERROR = AVERAGE ERROR In × UNIT OF MEASURE in units of weight Scale div = 15 × 5 = -0.010 lb			
						17 IS AVERAGE ERROR 0+ ? <input type="checkbox"/> YES → GO TO 18 <input checked="" type="checkbox"/> NO → LOT FAILS			
						18 <input type="checkbox"/> LOT ACCEPTED <input checked="" type="checkbox"/> LOT REJECTED			
						COMMENTS:			
				12 TOTAL ERROR <b>-50</b>	13 NUMBER OF MINUS PACKAGE ERRORS EXCEEDING MAV <b>0</b>				

Sekmar Thomani

**Acknowledged Receipt of Report**

Official

John Doe

## RANDOM PACK REPORT FORM

Page 2 of 2

REPORT NUMBER

## ALTERNATIVE TARE CALCULATIONS:

a	GROSS WEIGHT					
b	TARE WEIGHT					6b) $R_T =$
c	NET WEIGHT					6a) $R_C =$
d	PACKAGE ERROR $a - 6e - 8$					6c) $R_C \div R_T =$ $6a \div 6b$
e	PACKAGE ERROR (in scale div) $d \div 5$					6d) $n_1$ (Table 2-7 p. 30)
Additional Tare weights:	GROSS WT					6e) AVERAGE TARE
	TARE WT					

## LOT DISPOSITION CATEGORY A

NOTE: PACKAGES SHOULD NOT BE ARRANGED FROM LIGHTEST TO HEAVIEST WHEN FOLLOWING A

<p>19</p> <p>ON PAGE 1, THE NUMBER OF MINUS PACKAGE ERRORS EXCEEDING THE MAV IS RECORDED IN BOX 13</p> <p>BOX 4 CONTAINS THE ALLOWED NUMBER.</p> <p>IS 13 Greater than 4 ?</p> <p><input type="checkbox"/> YES → LOT FAILS. RECORD DISPOSITION IN BOX 18, PAGE 1</p> <p><input type="checkbox"/> NO → GO TO 20</p>		<p>20</p> <p>AVERAGE ERROR (Scale div)</p> <p>= TOTAL ERROR <math>\div</math> NO. OF PACKAGES</p> <p>= 12 <math>\div</math> 2</p>	
<p>23</p> <p>GROUP</p> <p>RANGE OF PACKAGE ERRORS FOR EACH GROUP OF 5 PACKAGES</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p>		<p>21</p> <p>AVERAGE ERROR in units of weight</p> <p>= AVERAGE ERROR in no. of scale div.</p> <p>= 20 <math>\times</math> 5</p>	
<p>24</p> <p>AVERAGE = SUM OF <math>\div</math> NO. OF GROUPS R R</p> <p><math>\bar{R} =</math></p>		<p>22</p> <p>IS 20 MINUS?</p> <p><input type="checkbox"/> NO → RECORD DISPOSITION IN BOX 18, PAGE 1</p> <p><input type="checkbox"/> YES → GO TO 23</p>	
<p>25</p> <p>TABLE 2-3 Col. 2 value (page 20)</p>		<p>26</p> <p><math>d = 24 \times 25</math></p> <p>=</p>	
<p>27</p> <p><math>(n/N) \times 100 =</math> <math>(2 \div 1) \times 100 =</math></p>		<p>28</p> <p>Use 27 to look up f in Table 2-4 (page 21) f =</p>	
<p>29</p> <p><math>T = 26 \times 28</math></p> <p>=</p>		<p>DISREGARDING THE SIGNS, IS 20 larger than 29 ?</p> <p>   YES → LOT FAILS</p> <p>   NO → RECORD DISPOSITION IN BOX 18, PAGE 1</p>	
<p>Record final lot disposition on page 1 in box 18</p>			

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John Doe

# WORKSHEET FOR PACKAGES LABELED BY LIQUID VOLUME

NUMBERS WITH BOXES (e.g. 3) REFER TO REPORT FORM (page 53)  
STEP NUMBERS (e.g. STEP 5) REFER TO WORKSHEET

Fill out report form up through box 8, skip boxes 3 and 4.

	(1st Pkg)	(2nd Pkg)	(3rd)	(4th)	(5th)
1. Gross Weight	1.184 lb	1.187 lb			
2. Tare Weight $R_T = 0.001$	0.396 lb	0.395 lb			
Net Weight $R_C = 0.004$	0.788	0.792			
3. Flask Weight (full)	1.109	1.108			
4. Flask Weight (empty, wetted)	0.585	0.585			
5. Weight of Liquid (Step 3 – Step 4)	0.524	0.523			
6. Volume of Flask	8 fl oz	8 fl oz			
7. Temperature of Liquid	70°F	71°F			

8. Do the weights recorded in Step 5 differ from each other by more than the value in Table 4-3 (page 38)?

YES ☐ If this box is checked, open all packages in sample and determine each package error by volume (see Section 4.6.).

NO ☒ If this box is checked, continue below.

9. AVERAGE WEIGHT OF LIQUID IN FLASK = AVERAGE OF STEP 5 =

0.5235 lb

10. AVERAGE WEIGHT OF LABELED VOLUME =  $\frac{\text{LABELED VOLUME}}{\text{FLASK VOLUME}} \times \text{AVG. WEIGHT OF LIQUID IN FLASK}$

$$= \frac{\text{box } \boxed{1}}{\text{Step 6}} \times \text{Step 9} =$$

$$= \frac{12 \text{ fl oz}}{8 \text{ fl oz}} \times 0.5235 \text{ lb}$$

0.78525 lb

\*11.  $(R_C/R_T = \underline{4}) (n_t = \underline{2})^\dagger$  See Table 2-7 (pages 30 & 31)

12. AVERAGE TARE = AVERAGE OF STEP 2 (or average of Step 2 and additional tares)\*

=

0.3955 lb

Record in box 13 on report form

\* Alternative Tare procedure for liquids packed in glass.

† If additional packages are opened for tare, provision should be made for recording all pertinent data.



$$13. \text{NOMINAL GROSS WEIGHT} = \frac{\text{AVERAGE TARE}}{\text{AVERAGE WEIGHT OF LABELED VOLUME}} + \text{AVERAGE WEIGHT OF LABELED VOLUME}$$

$$= \text{Step 12} + \text{Step 10} = \boxed{1.181 \text{ lb}}$$

Record in box **14** on report form

14. For packages opened for Tare:

$$\text{PACKAGE ERROR (weight)} = \text{GROSS WEIGHT} - \text{NOMINAL GROSS WEIGHT}$$

$$= \text{Step 1} - \text{Step 13}$$

$$= \boxed{1.184 \text{ lb}} - \boxed{1.181 \text{ lb}} = \boxed{+0.003 \text{ lb}}^1 + \boxed{+0.006 \text{ lb}}^2$$

1	2	3	4	5
---	---	---	---	---

$$15. \text{PACKAGE ERROR (dimensionless units)} = \frac{\text{PACKAGE ERROR (weight)}}{\text{UNIT OF MEASURE}}$$

$$= \frac{\text{Step 14}}{\text{box 2}} = \frac{\boxed{+0.003 \text{ lb}}}{\boxed{.002 \text{ lb}}} = \boxed{+2}^1 \boxed{+3}^2$$

1	2	3	4	5
---	---	---	---	---

Record package errors on report form in crosshatched area.

$$16. \text{MAV (volume)} = \text{from Table 2-9 (pages 43 \& 44)}$$

$$\boxed{0.5 \text{ fl oz}}$$

Record in box **3** on report form.

$$17. \text{MAV (weight)} = \frac{\text{MAV (volume)} \times \text{AVERAGE WEIGHT OF LABELED VOLUME}}{\text{LABELED VOLUME}}$$

$$= \frac{\text{Step 16} \times \frac{\text{Step 10}}{\text{box 1}}}{\text{box 1}} = \boxed{0.0327 \text{ lb}}$$

$$= \frac{0.5 \text{ fl oz} \times 0.785 \text{ lb}}{12 \text{ fl oz}}$$

$$18. \text{MAV (dimensionless units)} = \frac{\text{MAV (weight)}}{\text{UNIT OF MEASURE}}$$

$$= \frac{\text{Step 17}}{\text{box 2}} = \boxed{16}$$

Record in box **4** on report form

19. Compare unopened packages with nominal gross weight (Step 13, box **14**).

Record package errors for remaining packages in sample directly on report form in crosshatched area.

Compare minus package errors with MAV (Step 18, box **4**).

Average package errors (box **18**). Convert back to units of volume as given below:

$$\text{AVERAGE PACKAGE ERROR (volume)} = \text{AVG. PACKAGE ERROR (dimensionless units)} \times \text{UNIT OF MEASURE} \times \frac{\text{LABELED VOLUME}}{\text{AVG. WEIGHT OF LABELED VOLUME}}$$

$$= \text{box 18} \times \text{box 2} \times \frac{\text{box 1}}{\text{Step 10}}$$

$$+0.4 \times 0.002 \text{ lb} \times \frac{12 \text{ fl oz}}{0.785 \text{ lb}}$$

$$\boxed{+0.012 \text{ fl oz}}$$

Record in box **19** on report form

(Boxes above with "3", "4", "5" in corners are for larger tare sample sizes.)

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# WORKSHEET FOR PACKAGES LABELED BY COUNT

NUMBERS WITH BOXES (e.g. [3]) REFER TO REPORT FORM (page 53)

STEP NUMBERS (e.g. "Step 5") REFER TO WORKSHEET

Fill out report form through box [8], skip boxes [3] and [4]

	(1st Pkg)	(2nd Pkg)	(3rd)	(4th)	(5th)
1. Gross Weight	0.136 lb	0.120 lb			
2. Tare Weight	0.002 lb	0.002 lb			
3. Count in Each Package	109	97			
4. Weight of Counted Items	0.133 lb	0.117 lb			
5. Weight of Labeled Count	0.122 lb	0.121 lb			
= $\frac{\text{Labeled Count}}{\text{Count}} \times \frac{\text{Step 4}}{\text{Step 3}} =$					

6. MAV from Table 2-10 (count) (page 45)

=

3

Record in box [3] on the report form

7. MAV/6 (weight) =  $\frac{\text{MAV/6 (count)}}{6} \times \frac{\text{WEIGHT OF COUNTED ITEMS}}{\text{COUNT IN PACKAGE}}$

$$= \frac{\text{Step 6}}{6} \times \frac{\text{Step 4 (for first package)}}{\text{Step 3 (for first package)}} = 0.0006 \text{ lb}$$

$\neq 0.5 \times \frac{0.133 \text{ lb}}{109}$

8. If using an equal-arm package checking scale, is value calculated in Step 7 equal to or larger than 1/2 the smallest graduation?

If using an electronic package checking scale, is value calculated in Step 7 at least as large as the smallest increment?

NO ☒ If this box is checked, open all packages in sample and determine each package error by actually counting the items inside the packages.

Continue as audit test

YES ☐ If this box is checked, continue below.

9. Do the weights recorded in Step 5 above differ from each other by more than the value in Table 4-3 (page 38)?

YES ☐ If this box is checked, open all packages in sample and determine each package error by counting items inside packages.

NO ☒ Average Weight of Labeled Count = average of Step 5 =

$$\frac{0.122 + 0.121}{2} = 0.1215$$

0.1215 lb

10. AVERAGE TARE = AVERAGE OF STEP 2

=

0.002 lb

Record in box [13] on report form

11. NOMINAL GROSS WEIGHT = AVERAGE TARE + AVERAGE WEIGHT OF LABELED COUNT

$$= \text{Step 10} + \text{Step 9} =$$

0.124 lb

Record in box [14] on report form.

12. For packages opened for Tare:

$$\text{PACKAGE ERROR (weight)} = \text{GROSS WEIGHT} - \text{NOMINAL GROSS WEIGHT}$$

$$= \begin{array}{|c|c|c|c|c|} \hline \text{Step 1} & \text{Step 11} & & & \\ \hline \text{0.136 lb} - \text{0.124 lb} & \text{0.120 lb} - \text{0.124 lb} & & & \\ \hline \text{+0.012 lb}^1 & -0.004 lb^2 & & & \\ \hline \end{array}$$

$$\text{13. PACKAGE ERROR (dimensionless units)} = \frac{\text{PACKAGE ERROR (weight)}}{\text{UNIT OF MEASURE}}$$

$$= \begin{array}{|c|c|c|c|c|} \hline \text{Step 12} & \div & \text{box 2} & & \\ \hline \frac{+0.012 \text{ lb}}{0.002 \text{ lb}} & & \frac{-0.004 \text{ lb}}{0.002 \text{ lb}} & & \\ \hline \text{+6}^1 & & -2^2 & & \\ \hline \end{array}$$

Record these package errors on report form in crosshatched area.

$$\text{14. MAV (weight)} = \frac{\text{MAV (count)} \times \text{AVERAGE WEIGHT OF LABELED COUNT}}{\text{LABELED COUNT}}$$

$$= \begin{array}{|c|c|c|} \hline \text{Step 6} & \times & \frac{\text{Step 9}}{\text{box 1}} \\ \hline 3 \times \frac{0.125 \text{ lb}}{100} & & \text{0.00364 lb} \\ \hline \end{array}$$

$$\text{15. MAV (dimensionless units)} = \frac{\text{MAV (weight)}}{\text{UNIT OF MEASURE}}$$

$$= \frac{\text{Step 14}}{\text{box 2}} = \frac{0.00364 \text{ lb}}{0.002 \text{ lb}} = 1.82 = \boxed{2} \quad \text{Record in box 4 on report form}$$

16. Compare unopened packages with nominal gross weight (Step 11 or box 14).

Record package errors for remaining packages in sample directly on report form in crosshatched area.

Compare minus package errors with MAV (Step 15 or box 4).

Average package errors (box 18). Convert back to units of count as given below:

$$\text{AVERAGE PACKAGE ERROR (count)} = \frac{\text{AVG. PACKAGE ERROR (dimensionless units)} \times \text{UNIT OF MEASURE} \times \text{LABELED COUNT}}{\text{AVG. WEIGHT OF LABELED COUNT}}$$

$$= \text{box 18} \times \text{box 2} \times \frac{\text{box 1}}{\text{Step 9}}$$

$$= \frac{4 \times 0.002 \text{ lb} \times 100}{0.1215 \text{ lb}} = \boxed{6.6 \text{ clips}} \quad \text{Record in box 19 on report form.}$$

(Boxes above with "3", "4", and "5" in corners are for larger tare sample sizes)

**SECTION 8. RANDOM NUMBER TABLE**





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## TABLE OF RANDOM DIGITS

31000	63837	17813	08076	19164	95508	17513	29416	61238	25818
87014	83331	56364	32768	85680	08844	59844	68794	32783	60318
47293	97023	35804	69886	47494	94574	45842	67221	77115	43398
33898	89236	06100	68848	08674	87786	42425	92091	86274	82166
26877	95856	65227	25165	01752	99463	15216	28719	04716	80246
53984	87855	70753	80386	78600	39244	76967	83263	57849	85890
97809	03548	00574	21143	11605	30245	87395	80966	28721	11095
85683	79483	74858	87491	57785	61270	51111	50490	40940	02832
07758	57784	22934	17165	37776	33361	79191	97398	40881	98552
13995	74006	90843	85761	89037	13567	67089	47435	75156	70217
89630	94575	64517	80897	04861	50564	15287	94279	69154	75473
20355	08661	11092	19682	84287	23597	48246	74325	66320	90155
13496	74367	32701	87819	29050	90959	99765	59374	45204	87750
68419	49317	30340	62744	45214	79826	34043	73218	72788	26143
61481	09786	08768	93715	43847	68901	51249	35382	67776	06271
71877	53924	09630	62975	64470	46832	40591	23477	21063	31229
99283	86530	86819	38955	91744	89632	64623	84986	85990	47639
09047	83453	12775	32000	60098	98862	93422	66212	86413	82884
83724	89682	53950	41500	16023	83862	88274	68301	99673	40945
56126	46618	87708	91994	38384	27047	91550	18903	45535	45586
13810	51503	55122	22997	82556	22697	54985	64852	58775	66737
85630	22794	81623	10927	52252	27384	03122	17454	03250	23232
93350	28643	39097	00914	69844	06450	32818	88752	28722	94656
05002	71178	15414	99874	58046	35461	56349	81936	14964	83638
70358	57182	45747	30830	70542	25932	16298	23521	72454	11640
98169	51114	18115	40718	46082	75847	15678	22842	44615	97810
28010	95831	94028	57041	75137	55128	99785	33467	33834	04860
05576	47156	09300	11197	97670	20064	98145	84774	07907	10992
80748	66311	79421	00202	68501	40422	07368	26795	24353	78969
39746	23690	67845	83962	09451	21501	75317	09049	69440	16137
39380	72397	88106	07851	67756	58042	44218	52775	49082	54400
55865	70318	58189	35340	91500	80940	39231	54836	18038	03557
34223	72744	83926	40078	80791	42723	68340	47452	17443	69289
91312	44474	09925	41416	96671	11213	60979	04130	72380	73582
51010	08021	53914	37499	40228	92606	07225	18014	71063	50111
48890	58264	18790	91535	04933	56656	76389	37904	98017	07663
24876	93198	77444	53782	48866	65614	11410	90637	63675	43554
49408	42923	28162	09789	15155	66742	66785	79065	93573	19853
56307	90901	18117	36505	01598	68997	96338	40823	96247	55573
48320	09322	13457	84931	54701	14878	05422	65358	85636	31948
51083	00619	05548	25431	15175	82428	00637	41814	68871	31688
43249	71593	85535	59834	01488	06917	32653	80134	01832	25905
00370	17413	75537	79824	24428	28941	58659	66731	99940	27156
55737	45462	12484	64858	43581	06220	07507	39119	38024	99720
39551	38058	10445	18463	80812	51243	22351	63266	94057	06573
02369	11289	99499	32922	88429	90484	42010	53308	33206	36137
92788	62546	26147	83529	10012	77611	78925	86071	66344	35705
98650	95898	74254	45173	17430	73832	03411	88447	43279	35057
95591	85858	51058	26140	00995	16831	87372	72616	18796	58537
67853	23563	41063	63355	72454	16016	72229	54720	09846	81392

## TABLE OF RANDOM DIGITS

32942	95416	42339	59045	26693	49057	87496	20624	14819	48667
07410	99859	83828	21409	29094	65114	36701	25762	12827	45692
59981	68155	45673	76210	58219	45738	29550	24736	09574	35036
46251	25437	69654	99716	11563	08803	86027	51867	12116	38469
65558	51904	93123	27887	53138	21488	09095	78777	71240	87225
99187	19258	86421	16401	19397	83297	40111	49326	81686	40601
35641	00301	16096	34775	21562	97983	45040	19200	16383	68739
14031	00936	81518	48440	02218	04756	19506	60695	88494	58501
60677	15076	92554	26042	23472	69869	62877	19584	39576	18290
66314	05212	67859	89356	20056	30648	87349	20389	53805	85243
20416	87410	75646	64176	82752	63606	37011	57346	69512	56464
28701	56992	70423	62415	40807	98086	58850	28968	45297	80419
74579	33844	33426	07570	00728	07079	19322	56325	84819	48754
62615	52342	82968	75540	80045	53069	20665	21282	07768	60375
93945	06293	22879	08161	01442	75071	21427	94842	26210	95002
75689	76131	96837	67450	44511	50424	82848	41975	71663	79656
02921	16919	35424	93209	52133	87327	95897	65171	20376	13475
14295	34969	14216	03191	61647	30296	66667	10101	63203	75144
05303	91109	82403	40312	62191	67023	90073	83205	71344	96216
57071	90357	12901	08899	91039	67251	28701	03846	94589	88403
78471	57741	13599	84390	32146	00871	09354	22745	65806	78187
89242	79337	59293	47481	07740	43345	25716	70020	54005	23973
14955	59592	97035	80430	87220	06392	79028	57123	52872	94991
42446	41880	37415	47472	04513	49494	08860	08038	43624	46013
18534	22346	54556	17558	73689	14894	05030	19561	56517	96479
39284	33737	42512	86411	23753	29690	26096	81361	93099	33868
33922	37329	89911	55876	28379	81031	22058	21487	54613	81052
78355	54013	50774	30666	61205	42574	47773	36027	27174	44830
08845	99145	94316	88974	29828	97069	90327	61842	29604	47994
01769	71825	55957	98271	02784	66731	40311	88495	18821	12463
17639	38284	59478	90409	21997	56199	30068	82800	69692	45133
05851	58653	99949	63505	40409	85551	90729	64938	52403	56841
42396	40112	11469	03476	03328	84238	26570	51790	42122	40874
13318	14192	98167	75631	74141	22369	36757	89117	54998	87031
60571	54786	26281	01855	30706	66578	32019	65884	58485	10909
09531	81853	59334	70929	03544	18510	89541	13555	21168	81318
72865	16829	86542	00396	20363	13010	69645	49608	54738	17894
56324	31093	77924	28622	83543	28912	15059	80192	83964	61904
78192	21626	91399	07235	07104	73652	64425	85149	75409	67104
64666	34767	97298	92708	01994	53188	78476	07804	62404	34828
82201	75694	02808	65983	74373	66693	13094	74183	73020	31086
15360	73776	40914	85190	54278	99054	62944	47351	89098	26735
68142	67957	70896	37983	20487	95350	16371	03426	13895	42170
19138	31200	30616	14639	44406	44236	57360	81644	94761	92813
28155	03521	36415	78452	92359	81091	56513	88321	97910	22235
87971	29031	51780	27376	81056	86155	55488	50590	74514	58791
58147	68841	53625	02059	75223	16783	19272	61994	71090	78416
18875	52809	70594	41649	32935	26430	82096	01605	65846	65228
75109	56474	74111	31966	29969	70093	98901	84550	25769	82586
35983	03742	76822	12073	59463	84420	15868	99505	11426	62723



## TABLE OF RANDOM DIGITS

12651	61646	11769	75109	86996	97669	25757	32535	07122	76763
81769	74436	02630	72310	45049	18029	07469	42341	98173	79260
36737	98863	77240	76251	00654	64688	09343	70278	67331	98729
82861	54371	76610	94934	72748	44124	05610	53750	95938	01485
21325	15732	24127	37431	09723	63529	73977	95218	96074	42138
74146	47887	62463	23045	41490	07954	22597	60012	98866	90959
90759	64410	54179	66075	61051	75385	51378	08360	95946	95547
55683	98078	02238	91540	21219	17720	87817	41705	95785	12563
79686	17969	76061	83748	55920	83612	41540	86492	06447	60568
70333	00201	86201	69716	78185	62154	77930	67663	29529	75116
14042	53536	07779	04157	41172	36473	42123	43929	50533	33437
59911	08256	06596	48416	69770	68797	56080	14223	59199	30162
62368	62623	62742	14891	39247	52242	98832	69533	91174	57979
57529	97751	54976	48957	74599	08759	78494	52785	68526	64618
15469	90574	78033	66885	13936	42117	71831	22961	94225	31816
18625	23674	53850	32827	81647	80820	00420	63555	74489	80141
74626	68394	88562	70745	23701	45630	65891	58220	35442	60414
11119	16519	27384	90199	79210	76965	99546	30323	31664	22845
41101	17336	48951	53674	17880	45260	08575	49321	36191	17095
32123	91576	84221	78902	82010	30847	62329	63898	23268	74283
26091	68409	69704	82267	14751	13151	93115	01437	56945	89661
67680	79790	48462	59278	44185	29616	76531	19589	83139	28454
15184	19260	14073	07026	25264	08388	27182	22557	61501	67481
58010	45039	57181	10238	36874	28546	37444	80824	63981	39942
56425	53996	86245	32623	78858	08143	60377	42925	42815	11159
82630	84066	13592	60642	17904	99718	63432	88642	37858	25431
14927	40909	23900	48761	44860	92467	31742	87142	03607	32059
23740	22505	07489	85986	74420	21744	97711	36648	35620	97949
32990	97446	03711	63824	07953	85965	87089	11687	92414	67257
05310	24058	91946	78437	34365	82469	12430	84754	19354	72745
21839	39937	27534	88913	49055	19218	47712	67677	51889	70926
08833	42549	93981	94051	28382	83725	72643	64233	97252	17133
58336	11139	47479	00931	91560	95372	97642	33856	54825	55680
62032	91144	75478	47431	52726	30289	42411	91886	51818	78292
45171	30557	53116	04118	58301	24375	65609	85810	18620	49198
91611	62656	60128	35609	63698	78356	50682	22505	01692	36291
55472	63819	86314	49174	93582	73604	78614	78849	23096	72825
18573	09729	74091	53994	10970	86557	65661	41854	26037	53296
60866	02955	90288	82136	83644	94455	06560	78029	98768	71296
45043	55608	82767	60890	74646	79435	13619	98868	40857	19415
17831	09737	79473	75945	28394	79334	70577	38048	03607	06932
40137	03981	07585	18128	11178	32601	27994	05641	22600	86064
77776	31343	14576	97706	16039	47517	43300	59080	80392	63189
69605	44104	40103	95635	05635	81673	68657	09559	23510	95875
19916	52934	26499	09821	87331	80993	61299	36979	73599	35055
02606	58552	07678	56619	65325	30705	99582	53390	46357	13244
65183	73160	87131	35530	47946	09854	18080	02321	05809	04898
10740	98914	44916	11322	89717	88189	30143	52687	19420	60061
98642	89822	71691	51573	83666	61642	46683	33761	47542	23551
60139	25601	93663	25547	02654	94829	48672	23736	84994	13071

## TABLE OF RANDOM DIGITS

42902	51104	38993	54071	75033	43897	24684	62233	05749	76653
82989	95401	97093	57790	09271	05895	27692	65558	28890	75645
13523	66327	39522	83279	50432	88392	37826	81599	97612	34122
74785	72548	36886	97749	52364	78430	15990	86418	53689	73170
77739	44753	03957	53267	13225	89471	59481	53923	52588	54986
58236	98093	81969	21510	20727	91655	23601	77178	43468	77172
94641	38922	76016	66041	92109	76430	07105	45987	62177	37542
15317	99242	46970	58119	15178	10125	89295	83401	28737	53214
00624	09824	83319	26428	69711	71980	77666	57012	83722	06961
23295	02389	05795	70981	05664	32846	99935	81786	90285	03818
70292	13217	90859	05792	09833	49409	45496	62194	98232	59969
08550	22580	43519	51755	50308	68330	70244	27806	33662	90457
94981	10727	29544	37001	02751	82481	33622	89729	10488	54507
70318	46657	73496	92074	63918	13428	13249	68163	31082	72138
27510	92421	43020	79733	81369	11801	43094	91733	79865	67010
41289	29535	33408	05708	76999	37772	97740	44905	16840	25538
37586	71952	19967	77327	45052	16811	52264	09700	08766	08450
65737	05451	24726	95840	89663	37418	31034	44631	02044	89446
87473	53058	80611	24464	50379	93555	80327	29829	75884	69962
89920	40997	03736	00992	80443	12071	57996	42605	92034	89189
10203	39157	90207	07120	19280	37862	96041	66652	05173	59475
63864	57186	93586	52497	32459	85507	19646	80758	31519	71022
45006	51623	30675	56395	67037	33850	94000	57166	88739	92350
01839	83286	87159	72173	69624	75457	95469	48064	31695	17608
07708	41627	62416	05579	87013	84309	56068	84979	78592	36446
17655	18629	94121	20967	82561	65520	87874	72484	86640	33610
96137	55079	15672	21474	22403	74557	10290	39575	62266	10125
66495	22010	73641	70391	31391	43927	45219	38479	80100	82717
54585	37425	12794	71143	65025	74706	30555	42290	45357	08567
28180	01067	68577	99878	01960	86209	95045	62490	34554	65505
44655	45433	72815	11383	27507	80064	26860	44549	42538	48425
31321	57930	02748	46178	27490	65081	97037	67297	54273	67483
36218	26166	64389	39466	53435	89404	45328	34152	24787	98162
06853	28955	15516	22467	54482	70997	37271	13166	32827	29958
45231	95235	00120	85500	41753	36053	04285	77365	33273	97811
60484	63181	83125	42402	86905	40988	25091	68407	18356	62600
83577	81518	87638	08719	84819	15068	60067	48628	46522	78010
09724	39466	80440	69636	37481	20907	90064	06280	57942	71723
58504	66886	64596	23484	25596	43400	04787	54631	05421	50230
37033	02248	28174	29215	51118	04863	23752	10000	33331	62358
28026	12852	46235	15058	00222	26478	73671	81592	18436	67676
12831	55496	60299	47364	52600	02906	93295	27011	42904	33856
14507	71736	33817	42164	89793	67645	06609	22483	49017	99946
82424	22539	73202	32091	97375	11126	75877	89720	88213	65129
59133	35497	25135	24968	93294	12442	89020	11700	42936	43010
72031	14923	44610	70690	35644	97897	16835	41673	63777	90758
65161	59905	40133	95680	78737	93726	95312	18215	20184	84289
50062	64153	20669	81461	80140	88536	24552	78781	39807	00018
18116	19026	22965	39908	30649	91235	27259	08470	77321	12795
29105	00954	71562	10193	41802	53790	85828	60565	09835	42761



## TABLE OF RANDOM DIGITS

43398	79666	37687	36431	34822	00779	38828	71137	85054	64660
78711	15270	42232	87128	31711	77482	85873	17317	94357	78210
54489	52503	11005	00067	23146	44973	39257	65815	13929	77081
17324	40078	14214	19160	25276	05125	52020	97099	77116	45921
67297	25163	16386	62687	07398	18963	60035	35598	14404	14872
56959	16184	32709	57507	92221	82925	46064	94665	73523	23638
78207	34228	39440	67765	80627	08869	05514	24215	65237	82139
99508	47528	01328	67220	50824	47847	69726	75453	08780	53120
66199	99811	13887	31301	41034	63717	10310	33607	01858	28266
91987	73491	22639	94096	01702	48093	35976	93334	17638	65818
80125	84984	47804	90908	11106	43995	83182	39647	41504	23286
69743	16618	59364	73113	89143	89412	39331	84989	92091	01383
41686	85487	91526	28591	54635	77149	59117	30291	68266	65760
80967	75537	81999	02257	62232	00956	24954	88932	90733	35767
24148	95247	12340	39407	71596	53961	61089	68699	38891	87153
22989	64262	12716	32910	32303	18783	65166	56622	93342	14032
54147	01638	95954	66666	30544	67089	04524	19251	57440	69100
07529	10668	23743	02743	10252	47893	83969	54252	47327	31685
36379	13588	44587	31015	34971	25146	33188	05218	17157	65663
38653	73761	61363	95667	03372	35800	58711	15872	33342	02963
72327	65811	53782	01608	38741	58353	51594	48982	85028	75444
41133	06312	13340	18870	27204	83187	91970	91498	17234	52283
15039	81095	50787	28452	61100	39538	25225	92624	18517	77361
40499	67587	16761	25929	43836	43466	80409	95407	46777	22668
46910	72907	18515	12710	11580	52823	95769	71506	39644	66877
15009	81751	07942	14046	54993	68001	13782	91933	61130	61752
10538	10295	62995	16527	55334	05736	92168	35393	01026	26984
70204	91225	78307	55577	78715	54507	21486	26920	52995	98095
30403	98849	55318	99947	23625	74643	85157	45893	49287	03567
75147	49930	47054	08485	91397	25614	83669	08353	61573	49629
20770	53498	05412	19184	25997	06100	27128	43137	77812	13101
51096	90416	18721	42390	31517	28366	30073	89021	40881	36162
05027	43924	37581	31418	57010	05808	75544	68156	75440	64496
22013	11299	76690	92730	10867	12748	58655	44844	11933	16752
50232	30821	45382	85723	15635	85910	19874	61262	74598	41321
20724	99075	91270	13936	74962	15346	05181	52254	42138	18237
65692	61084	48856	34766	09098	87381	29763	65051	91174	80750
81215	08824	06387	10900	83463	19773	83029	81689	66067	38729
86127	96878	53819	10715	67213	53160	17249	44596	76354	33601
26483	16992	89421	15216	71632	83429	96263	16342	15595	48978
84697	87543	67935	72389	18299	93559	90668	86972	42632	40502
89691	53802	42595	31089	20914	80542	96241	14487	84488	74117
20295	92548	68410	15006	02091	78176	67889	32552	62792	30147
98925	64297	94922	26349	58805	55911	80640	74650	71207	14412
53560	52945	68649	31696	69387	62573	15635	23958	75948	59883
45034	92695	98157	83536	55140	91189	98557	21505	89477	32010
35222	86197	20082	60378	05392	41064	08418	28472	39593	19710
08071	77462	20243	55151	02607	78441	12397	76800	62801	62770
54802	07781	29975	44720	62534	16601	78043	70078	13691	09599
84209	92329	32234	11385	09067	99793	84549	50498	13340	41986

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07018	31172	12572	23968	55216	85366	56223	09300	94564	18712
52444	65625	97918	46794	62370	59344	20149	17596	51669	47429
72161	57299	87521	44351	99981	55008	93371	60620	66662	27036
17918	75071	91057	46829	47992	26797	64423	42379	91676	75127
13623	76165	43195	50205	75736	77473	07268	31330	07337	55901
27426	97534	89707	97453	90836	78967	00704	85734	21776	85764
96039	21338	88169	69530	53300	29895	71507	28517	77761	17244
68282	98888	25545	69406	29470	46476	54562	79373	72993	98998
54262	21477	33097	48125	92982	98382	11265	25366	06636	25349
66290	27544	72780	91384	47296	54892	59168	83951	91075	04724
53348	39044	04072	62210	01209	43999	54952	68699	31912	09317
34482	42758	40128	48436	30254	50029	19016	56837	05206	33851
99268	98715	07545	27317	52459	75366	43688	27460	65145	65429
95342	97178	10401	31615	95784	77026	33087	65961	10056	72834
38556	60373	77935	64608	28949	94764	45312	71171	15400	72182
39159	04795	51163	84475	60722	35268	05044	56420	39214	89822
41786	18169	96649	92406	42773	23672	37333	85734	99886	81200
95627	30768	30607	89023	60730	31519	53462	90489	81693	17849
98738	15548	42263	79489	85118	97073	01574	57310	59375	54417
75214	61575	27805	21930	94726	39454	19616	72239	93791	22610
73904	89123	19271	15792	72675	62175	48746	56084	54029	22296
33329	08896	94662	05781	59187	53284	28024	45421	37956	14252
66364	94799	62211	37539	80172	43269	91133	05562	82385	91760
68349	16984	86532	96186	53893	48268	82821	19526	63257	14288
19193	99621	66899	12351	72438	99839	24228	32079	53517	18558
49017	23489	19172	80439	76263	98918	59330	20121	89779	58862
76941	77008	27646	82072	28048	41589	70883	72035	81800	50296
55430	25875	26446	25738	32962	24266	26814	01194	48587	93319
33023	26895	65304	34978	43053	28951	22676	05303	39725	60054
87337	74487	83196	61939	05045	20405	69324	80823	20905	68727
81773	36773	21247	54735	68996	16937	18134	51873	10973	77090
74279	85087	94186	67793	18178	82224	17069	87880	54945	73489
34968	76028	54285	90845	35464	68076	15868	70063	26794	81386
99696	78454	21700	12301	88832	96796	59341	16136	01803	17537
55282	61051	97260	89829	69121	86547	62195	72492	33536	60137
31337	83886	72886	42598	05464	88071	92209	50728	67442	47529
94128	97990	58609	20002	76530	81981	30999	50147	93941	80754
06511	48241	49521	64568	69459	95079	42588	98590	12829	64366
69981	03469	56128	80405	97485	88251	76708	09558	86759	15065
23701	56612	86307	02364	88677	17192	23082	00728	78660	74196
09237	24607	12817	98120	30937	70666	76059	44446	94188	14060
11007	45461	24725	02877	74667	18427	45658	40044	59484	59966
60622	78444	39582	91930	97948	13221	99234	99629	22430	49247
79973	43668	19599	30021	68572	31816	63033	14597	28953	21162
71080	71367	23485	82364	30321	42982	74427	25625	74309	15855
09923	26729	74573	16583	37689	06703	21846	78329	98578	25447
63094	72826	65558	22616	33472	67515	75585	90005	19747	08865
19806	42212	41268	84923	21002	30588	40676	94961	31154	83133
17295	74244	43088	27056	86338	47331	09737	83735	84058	12382
59338	27190	99302	84020	15425	14748	42380	99376	30496	84523



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29257	36060	81080	67493	23666	22251	17616	60716	77125	18653
04426	95304	83272	18379	46498	60045	80649	35179	03185	57068
72622	55513	82844	85553	16852	57931	84063	57516	46529	47030
63755	08166	33097	46244	16769	48531	56618	90035	88363	04097
23931	55916	48477	33067	76572	84835	96208	68558	23560	89245
96443	13697	61186	63971	20547	14846	77137	62636	88927	34322
33595	83707	92545	83866	06895	28019	08547	04275	79277	28833
87400	72301	05172	25637	13665	86725	45970	42670	35291	22685
10716	35521	73850	99275	97475	11064	93492	05362	57562	99582
81465	80905	77978	42899	65518	48688	96755	83554	76916	15224
77706	53575	16463	00350	44697	94868	22697	33740	60701	04034
75622	35864	56564	40277	66044	78417	52968	52982	82340	92970
18418	16826	26355	51841	01235	15986	65898	74181	51391	11313
02205	51273	87582	80276	88583	30633	50721	65017	48735	04476
08345	03180	15659	86285	09579	07969	17850	88197	14309	25013
43734	89733	87697	28098	70926	22790	79293	01093	72673	60257
89981	80872	87829	56857	78208	85949	60249	30159	45499	29735
20660	70109	01273	42633	77445	02439	03144	12100	12971	59574
48210	18773	36169	60470	37941	68015	76627	38973	81699	34262
65433	21735	36444	40569	32023	60078	31045	99679	76253	81056
09638	39323	55045	58988	30967	16461	57491	58625	14327	19825
89418	30419	67738	14877	17948	30083	54764	62024	68310	21207
23083	08913	59531	11403	96757	23468	57382	48057	70725	59933
30343	01516	78510	15138	49538	58588	06080	23844	44412	87882
18284	64484	57502	80120	95894	34977	74098	73551	81743	58364
47943	40974	82162	34485	44930	27794	66180	76055	69035	91186
55480	50090	91328	09979	23824	71199	65640	69121	12071	46595
29905	46328	06091	12419	35540	09817	63102	80393	76848	09779
82268	73981	37205	65249	07751	92537	92368	09251	29892	53919
42183	74789	78645	68686	12399	27592	36651	05904	45764	11336
82178	50120	06396	62927	27126	40350	87365	28918	39266	22549
49836	15424	10577	89926	89407	37622	38430	48356	93062	86591
96881	32775	85851	60822	08530	83330	99819	24740	34199	90176
20414	02812	65040	27108	34291	90243	18207	85800	53786	28723
62174	64315	82589	31761	26476	95984	54304	13061	77554	92988
48808	13755	89592	43057	35053	53853	20086	12130	90105	26139
93162	69261	87781	82538	75030	08496	25862	41090	06267	07824
81009	59154	63054	77841	35348	61706	27750	03274	64051	62435
11796	19222	73310	68903	54526	56338	54017	47320	67925	40813
48728	67741	07718	37592	95126	68160	55907	46168	06840	96853
73347	09803	63349	39332	23487	69045	51759	99114	86318	60963
34704	15020	45067	29373	24970	94427	23023	88559	65920	94063
24147	47285	01070	86152	20380	13113	60138	69612	38184	41601
38113	53850	17580	01850	33698	60239	84065	82019	52464	11836
01435	59660	45587	96635	57407	97292	15584	05498	54391	33149
76230	93764	38424	43810	11252	02843	64856	71551	66186	36921
76698	49005	35125	73104	93675	83189	38168	69103	75653	64780
21081	41735	47975	16487	37540	89936	16311	78716	51188	87349
25671	32206	93142	93930	57886	14113	18177	97474	32669	21337
03245	76312	63143	57914	10925	61894	91043	64156	61020	55339

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12304	04213	03857	77012	84959	53863	21679	49848	20212	95997
59502	54256	54169	18949	00578	72749	86070	61699	19657	21066
52525	24721	81450	99816	07524	29159	99127	49280	66476	22569
06066	38128	36539	68551	74800	30921	23803	32781	20508	10456
31362	41206	88773	78930	14709	25123	82601	48698	86804	39779
55291	39114	43274	08119	42433	53045	29083	18310	02445	83490
51077	99516	90497	26100	79144	28324	78290	22654	79424	93171
29369	93401	32750	04395	63773	29493	73060	05438	78848	21222
42533	89580	38883	55304	05990	22509	58052	94655	59881	73803
04754	07817	51857	38035	00758	84795	46887	37543	12070	01151
32520	68082	07089	28568	15498	00217	74945	29306	71156	07467
18689	25625	09537	43720	39550	47209	02896	40180	52349	02624
57766	90922	46815	02604	10651	47538	30491	39659	19233	00997
16644	40236	98798	16895	47562	30781	89366	72890	83027	49302
54973	61336	84051	15680	61130	44605	42552	09081	57256	55053
18843	01926	08340	63318	39291	68949	86588	81732	61205	98340
30789	48386	59732	94241	28859	07370	25804	52349	20145	54183
23835	05112	17169	92771	81220	68367	14568	66179	63268	15912
99348	87514	12386	12568	79923	56581	59255	48255	03675	88717
52403	25537	61636	84602	75830	34897	64019	80421	94358	83868
94954	12924	25669	91119	51663	92889	25249	10664	31461	37253
28337	02935	11644	94210	85920	78117	31536	38256	97799	78542
02045	59831	38770	48734	87524	74387	85480	33475	43352	00890
39668	61855	36871	50775	30592	57143	17381	68856	25853	35041
77174	97729	23913	48357	63308	16090	51690	54607	72407	55538
84205	12639	79348	36085	27973	65157	07456	22255	25626	57054
31893	11224	92074	54641	53673	54421	18130	60103	69593	49464
82986	90226	06873	21440	75593	41373	49502	17972	82578	16364
06252	31044	12478	37622	99659	31065	83613	69889	58869	29571
39097	59195	57175	55564	65411	42547	70457	03426	72937	83792
54053	73645	91616	11075	80103	07831	59309	13276	26710	73000
92640	43265	78025	73539	14621	39044	47450	03197	12787	47709
95234	80109	27587	67228	80145	10175	12822	86687	65530	49325
48122	50637	16690	20427	04251	64477	73709	73945	92396	68263
89174	38509	70183	58065	65489	31833	82093	16747	10386	59293
16862	18929	90730	35385	15679	99742	50866	78028	75573	67257
76054	03096	10934	93242	13431	24590	02770	48582	00906	58595
39901	38669	82462	30166	79613	47416	13389	80268	05085	96666
39221	64403	27463	10433	07606	16285	93699	60912	94532	95632
14704	78488	02979	52997	09079	92709	90110	47506	53693	49892
35052	59679	46888	69929	75233	52507	32097	37594	10067	67327
01514	33319	53638	83161	08289	12639	08141	12640	28437	09268
59723	91330	82433	61427	17239	89160	19666	06814	37841	12847
75249	58952	35766	31672	50082	22795	66948	65581	84393	15890
82558	71239	10853	42581	08792	13257	61973	24450	52351	16602
80822	66731	20341	27398	72906	63955	17276	10646	74692	48438
41067	39859	54458	90542	77563	51839	52901	53355	83281	19177
13008	65442	26337	66530	16687	35179	46560	00123	44546	79896
36084	99076	34314	23729	85264	05575	96855	23820	11091	79821
37741	50156	28603	10708	68933	34189	92166	15181	66628	58599



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00958	98267	66194	28926	99547	16625	45515	67953	12108	57846
30346	26957	78240	43195	24837	32511	70880	22070	52622	61881
14056	57841	00833	88000	67299	68215	11274	55624	32991	17436
96789	22551	12111	86683	61270	58036	64192	90611	15145	01748
12633	15075	47189	99951	05755	03834	43782	90599	40282	51417
25893	57092	76396	72486	62423	27618	84184	78922	73561	52818
13092	50817	46409	17469	32483	09083	76175	19985	26309	91536
72872	54109	74626	22111	87286	46772	42243	68046	44250	42439
20724	19944	34450	81974	93723	49023	58432	67083	36876	93391
37009	52173	36327	72135	33005	28701	34710	49359	50693	89311
25961	70386	74185	77536	84825	09934	99103	09325	67389	45869
73962	47022	12296	41623	62873	37943	25584	09609	63360	47270
63164	76372	90822	60280	88925	99610	42772	60561	76873	04117
05366	00082	72121	79152	96591	90305	10189	79778	68016	13747
15902	61363	95268	41377	25684	08151	61816	58555	54305	86189
53845	17851	92603	09091	75884	93424	72586	88903	30061	14457
31694	55633	18813	90291	05275	01223	79607	95426	34900	09778
23016	96567	38840	26903	28624	67157	51986	42865	14508	49315
17292	18430	05959	33836	53758	16562	41081	38012	41230	20528
75465	99837	85141	21155	99212	32685	51403	31926	69813	58781
89013	86492	75047	59643	31074	38172	03718	32119	69506	67143
44551	77837	30752	95260	68032	62871	58781	34143	68790	69766
49675	13139	22986	82575	42187	62295	84295	30634	66562	31442
40789	73539	99439	86692	90348	66036	48399	73451	26698	39437
64086	82765	20389	93029	11881	71685	65452	89047	63669	02656
79143	31528	39249	05173	68256	36359	20250	68686	05947	09335
28231	07703	96777	33605	29481	20063	09398	01843	35139	61344
76327	50155	04860	32918	10798	50492	52655	33359	94713	28393
05428	65225	64285	86579	77447	75313	35762	45824	21535	48707
56800	69853	75583	38682	55733	98453	35129	73541	62087	36549
96180	50261	88659	11717	88909	87891	16709	97814	26600	79266
52712	95148	66393	07111	89741	03758	42184	67000	66680	61277
76869	19027	12764	32712	60671	98845	81227	38052	48243	91867
50472	24399	17313	79665	07409	73900	66673	58861	08168	10289
77168	64382	26927	54318	51043	03483	76777	27319	78196	16909
79482	10156	87785	49603	85048	63090	60719	29756	10696	75713
97826	82559	69027	41569	05422	47286	97825	15559	43482	07676
00872	36839	01840	14860	76529	55890	12228	33910	26878	88758
68457	71054	94300	18582	55813	26346	68685	24920	36374	87702
35973	75910	16921	48284	48074	01401	10518	25359	52702	82966
32091	50229	65799	13777	93030	53615	17057	07212	75930	56604
81440	18180	68025	89261	65881	32138	73735	78459	74164	18466
83893	89983	95140	40089	21441	39173	46895	16136	92301	33754
64000	19357	74288	60608	49826	78374	72191	94337	24234	44821
48420	68527	28646	44721	81925	48579	35499	63475	95235	51410
96237	34204	08890	41795	28507	83735	82390	49173	80738	89279
13429	41773	59936	30327	76898	96866	22721	96619	20297	01714
20753	53940	49246	73092	81744	00189	60064	57631	77199	82742
63752	93547	77926	16709	05242	91269	52190	47481	82784	61238
44413	49199	55899	09790	70636	19057	51986	69657	97293	47729



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57278	28133	04340	19889	27266	77468	02509	27534	00342	30727
97953	43227	41110	86887	19559	64945	54520	90528	18850	43610
07431	45121	73187	80431	57245	77311	44596	23531	63637	47042
20930	54735	95568	86799	49721	89049	01791	81084	03284	24096
78003	86322	23893	19483	18624	78634	31967	06395	34924	67283
48541	02641	89681	97881	69919	24170	85386	25834	75946	90965
52684	87995	43702	10623	95580	75795	59360	87848	83250	44168
44032	67360	54462	31774	01629	03406	81878	92801	27984	89892
40757	07266	13231	93527	51509	19550	24785	11136	35905	44879
42290	21749	34505	46547	03354	83574	17762	07646	66469	61568
37592	08604	53542	99986	26017	84967	86696	19155	88259	03612
32583	59967	64315	84822	74950	80322	10037	19425	96714	97330
75625	48032	05891	58701	91532	81253	87706	42235	44799	58271
91808	34409	59390	38399	09462	07373	19799	04132	31531	16485
11926	91034	26756	37752	47276	70856	94741	55372	50250	48775
78782	17338	68884	04609	03479	59241	39569	13351	64340	34108
54319	43047	73502	30408	94554	18640	91396	16242	96184	64191
34359	78839	55454	08551	19021	56584	84609	26286	31079	89061
52871	79550	40787	87299	70144	45090	45199	80127	21304	88681
69226	39419	66757	59927	04968	56061	66103	59708	36607	79140
07575	58710	92577	67823	52832	36514	56137	11321	62025	09049
91682	48619	15333	05876	20802	39128	75562	10170	72858	07010
62040	64062	70625	57559	46143	46638	37861	12551	58076	87218
80099	81346	54688	70326	22662	08106	82354	94331	29618	38043
77758	41609	69027	03208	28505	06689	61270	67122	45496	30345
20009	11788	77442	46535	09576	24905	46353	63277	36064	58249
52091	84347	27681	24853	68826	04138	33340	96698	89529	46622
19569	02594	04226	93412	36370	16393	05509	43349	01135	99264
48286	19309	39931	61597	95916	59340	30322	56291	45847	85836
44400	82261	21869	89837	64397	05508	31365	36334	08765	89749
19322	99470	86311	96458	84173	06386	39946	49558	80223	69513
21704	81386	35499	57991	05992	47982	01949	50203	45471	18610
59506	33660	80198	19429	26262	42605	64807	29526	50672	49761
69876	11749	18876	54051	71446	40239	42174	14601	61255	24318
47268	55681	53952	54010	24425	21284	90929	05499	37739	88835
80651	73964	85491	79648	30293	31305	96030	25760	85013	03763
91894	81410	81245	09998	80494	86183	01343	82296	80842	58427
40239	16519	23159	32970	91162	40386	81829	16582	45640	07032
88212	51975	93468	83446	94238	48988	63226	05278	32797	27430
55103	14461	92774	26397	46587	51470	41598	29070	26690	69567
15360	93359	86173	53747	03141	75425	69947	37198	30936	99987
70678	38035	89688	64524	08530	87826	82214	05660	04461	28460
23620	33295	98309	16475	26722	92523	62702	02103	38482	28012
71594	59029	79559	67497	56559	05538	38354	61813	04816	66451
63723	62966	40545	65085	77086	03427	62353	77932	81281	32626
24852	88450	99212	80393	72573	59370	75741	05229	43644	29794
80184	48999	76580	84648	04210	76599	43704	21301	06957	66554
46973	78646	73852	44752	50849	07905	65120	48320	23223	96491
18043	96840	23148	39768	10865	45987	55568	08478	73137	03867
84956	48341	26773	23897	70640	75961	04522	09761	81718	63357

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83183	15461	88997	96634	39343	76187	51649	69036	04387	43933
86561	67600	87081	76544	08982	44799	33555	05868	05527	41848
27512	89046	61975	79250	64579	21693	78499	77459	73214	50062
61330	11838	37496	74484	83272	89275	10818	38111	87939	44211
45991	21942	34406	28785	41740	84445	77205	84394	40760	73845
17361	67790	10353	36885	34317	44264	62994	23179	86523	35982
11374	46345	40639	19572	34159	12518	86926	65650	14931	57011
13487	32387	76475	72583	57269	02420	57224	07061	28379	21115
17471	44765	26548	66533	61231	65329	31960	22771	61051	03459
23375	29913	24245	78402	03791	21882	77019	79658	47396	86300
79409	54902	27283	19483	87369	31683	54726	46546	95474	54716
40624	97378	15645	87183	08818	44776	41489	12313	88860	09769
47740	49996	90997	40690	73062	99417	84362	36977	56369	33825
76063	24841	77021	90894	16615	13830	51094	31691	97311	47805
85552	39430	08275	29116	76537	95406	02098	86244	47511	92035
73400	98752	94428	82470	70234	73327	08371	99302	13947	18310
41227	45475	89941	82220	08842	19485	79705	80566	50682	96893
66320	30514	47330	42274	93579	79302	54240	24684	30781	01110
00073	79317	11694	06965	89006	94316	48751	43521	95198	95046
19931	62537	55575	41981	08748	11998	42525	51396	77505	85222
87074	08966	20423	48407	68906	90485	99587	62608	73296	11785
74563	92361	75481	22882	22919	01961	57961	65696	97895	34882
33982	03375	06982	00338	60557	16906	95057	64678	84564	58282
95867	32783	17767	06580	69379	21304	54385	57337	66048	41470
09816	65864	15555	43592	80089	40820	92984	23197	14041	50563
13779	17566	55197	55767	30887	28696	06354	94094	43299	10142
96515	24730	14411	98243	03526	00286	94458	84907	43064	89119
06581	66943	72967	97927	81196	15864	14293	68163	50903	35519
78198	10415	16231	82188	84332	40420	93463	00800	72462	56395
72217	51940	16252	86297	68166	83136	84292	30992	22657	93321
36602	57329	94716	80613	52102	02741	25523	50508	03878	62175
35220	00526	97050	74475	93497	39667	48890	38895	43131	11725
37659	02508	02161	82227	82576	00971	96152	59703	45999	66196
06123	81274	09518	38568	99416	66646	19522	92783	06648	37495
32472	45765	64687	06419	90828	54913	04257	20390	70620	34744
41937	54184	53475	57677	92683	77875	53562	73074	68772	17265
64203	17781	64522	40751	98591	63881	77361	50224	90595	94544
54748	28150	09088	95562	66008	41668	61055	12113	41145	33638
89617	19797	18631	16868	32211	97243	07806	86319	56303	25722
63114	46266	86924	42113	16959	35570	07168	74833	90074	40452
48797	96322	89434	67288	17497	11072	03346	07911	13655	47458
94761	68684	54663	56219	14889	90785	42384	79738	90052	02784
22523	08100	38128	66588	06899	61628	56409	32917	81762	33800
77245	32835	57649	06567	40270	86475	00593	52298	73492	48076
94958	53811	06706	05420	43164	20010	55845	23310	24208	17860
64716	84933	35061	22454	65854	62172	19370	08400	77516	80402
18339	99156	94403	32952	27225	48489	42531	46612	62830	18599
82150	89664	56067	07766	90242	77855	53538	48039	14134	68254
71143	09316	84551	48576	04613	17628	05044	83303	38751	74867
00944	53807	43766	59023	77152	34989	00924	75152	03837	81996



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57516	33747	06831	96252	31779	10830	69091	08241	98420	89517
39268	60588	27898	69882	64019	03284	50134	04387	46535	32736
75711	82466	24904	58171	13871	59513	35837	46135	70004	46840
48817	14059	89377	19670	05642	83284	22117	98269	10607	19187
08090	69146	68347	94073	69418	28633	74369	67856	89800	35908
23561	85971	37362	10657	30353	70564	17859	34684	45661	08168
23013	91122	18394	69196	27019	79767	91568	01829	29434	82946
17388	59294	21118	87103	28468	51339	40972	81840	34466	81721
78371	28385	72092	71887	49109	92668	77129	07083	97824	08008
65182	72610	38508	96133	90349	86078	10011	23017	14121	27827
55368	14100	57714	36082	10900	20721	60285	61376	70801	42474
32794	67872	24227	40195	61483	16991	23910	31528	97545	02971
93934	48600	76694	01622	57474	87900	34055	05896	50650	90034
33249	37997	95991	63797	39089	36203	25421	78775	44706	45433
93142	22835	73003	10659	78861	90887	57965	02598	75896	77513
54096	83219	64260	62543	03437	60288	68706	14510	90539	01072
86772	63897	16313	30365	60525	78336	76362	99969	74452	40354
34028	97995	33534	06819	83492	66904	16966	44818	85952	45129
99224	17222	62766	26166	54482	55713	20898	28709	70042	46466
48806	36559	28718	52823	99285	59135	39405	48174	59856	05918
96947	64653	47928	25269	42939	14792	16077	92751	11545	83261
64208	04451	98807	63587	50222	53976	36325	28225	33873	54328
42406	33938	82822	81613	05879	88394	50918	28786	66090	51554
17682	89917	69167	21525	04531	41654	38625	97558	70167	96943
05984	30315	05185	07689	28325	42983	43613	52850	78155	32843
81910	01465	48825	56146	39554	52239	09311	01939	05749	45215
39518	98704	05209	57436	33376	93929	20810	03834	28747	31626
24524	30021	29832	70231	96077	79507	49340	47646	08538	69998
07701	33187	24591	35234	08884	10437	48859	24720	49469	89057
92150	05739	57410	03567	24486	49071	64766	71131	94851	11508
67765	74112	44661	51925	04791	83512	99167	88659	33617	30832
22564	50040	81638	15428	41173	14877	79072	26097	48719	25670
05855	02164	74386	26018	79774	99563	73684	70620	26498	21037
00234	25133	07565	49325	12328	33723	91221	24353	60670	35342
98118	71680	04099	57757	88140	07208	76309	48330	91264	77936
39302	64683	95388	20259	20924	88534	34087	90000	07900	73540
02982	13503	28033	50836	66941	26823	44999	40571	19446	74690
53872	27988	77575	71142	35977	52543	13091	27754	88593	82162
29658	00175	67827	88394	04665	76107	50790	60307	85075	39935
58387	81275	92390	37895	11137	64692	01908	12630	16171	18874
04755	78939	34888	84796	72315	04347	78733	43658	95853	77314
38916	03129	90039	33356	62300	57453	13940	45965	61549	36957
76087	79901	49755	33329	45412	31415	43951	55925	36356	44826
82251	11028	82521	02331	11273	57294	26579	38440	51046	03887
98250	26658	63587	88638	82529	62334	82773	03684	26806	53635
38852	56056	91833	78352	44200	12426	48964	62341	53454	05451
15651	92455	37352	64350	09494	70331	69104	36612	46798	40145
50467	46033	44649	12306	06171	39750	66480	80649	02547	22140
76233	62364	28025	12444	52077	27402	92194	15167	99322	87689
07000	64530	09973	35046	11135	14382	90667	23626	72881	40503

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40681	27353	22597	88915	79178	81568	96319	51098	71270	63812
89713	63020	45133	71152	54318	33657	45481	41509	04687	33262
94563	84957	44619	79713	09949	65244	53466	55985	27077	81993
43027	68321	02813	47446	08517	28803	96663	86674	67775	55543
51194	79763	80567	62318	21541	41301	24034	29986	79315	61613
67373	65291	63392	50049	64763	77384	69945	86642	49238	31727
13011	44976	94731	44841	58114	02487	68308	63610	64436	79719
75053	10760	56728	67907	73573	06858	89809	12729	13637	70054
00416	07842	61398	82483	92684	53713	96476	13096	08892	29976
08104	19067	07653	11476	57271	28172	20924	86795	80075	74483
03614	04739	91340	60151	25949	13799	24239	37699	61160	65534
51781	71407	97071	01707	52119	71110	83590	08030	00655	26829
74840	30355	24811	91014	44450	53425	76329	88396	25471	24939
17855	86540	13831	52245	61860	99428	74067	55408	52533	50065
01207	28820	12109	62958	47884	88218	55819	09726	67161	38420
29475	55575	37654	91091	33918	95562	68096	03709	34564	53896
87008	92552	81623	12154	48696	96053	47245	69520	09495	97197
24644	01087	32311	77807	56658	93684	33336	01512	39831	85626
46326	03892	41967	94372	32998	58406	24326	88509	63328	21618
35039	82275	32560	11945	50878	87600	66917	92413	00939	75858
51940	44169	83459	88888	07752	23211	26260	08693	29368	99956
65375	34741	99245	09156	82529	61952	83897	09931	76427	69486
93919	72535	35297	38351	69774	61954	52808	51707	61318	15122
32641	23240	37301	36135	25186	02274	25956	08937	31372	06943
40131	51356	32702	75474	84559	53684	28758	39890	72112	15426
65093	45655	00947	97180	35175	46277	19665	24873	75652	72660
91020	86594	87835	53859	50205	22739	94579	69359	17526	57074
89051	71343	26912	15341	31812	05179	17404	23642	30470	35331
66627	47292	87259	27395	34567	98159	40764	95925	13833	63765
07313	43774	88701	56132	36069	16027	05491	37788	27276	57333
13840	83975	89909	88547	08856	37066	42128	07117	10909	68721
56422	38011	10458	65809	15295	99155	01271	36612	93163	18865
75812	82841	99809	33958	03468	98967	60237	86604	34209	87042
78396	28235	26532	83318	77096	36217	99285	32993	85093	53164
77050	98159	56449	08000	65445	38130	72304	32656	58223	09472
45534	45029	84611	04753	49955	10020	56276	90596	89037	18424
97612	39593	89037	03471	76022	08527	21418	56626	24739	06594
95835	42224	66513	35514	19282	86647	84339	33670	50372	38939
34916	94718	93210	03218	92353	34164	55546	57339	89379	94890
46632	41268	35295	93493	61016	32761	10767	22685	50950	78485
01487	64386	02269	15196	93712	61311	10786	18485	81751	28908
44214	71437	59039	12657	80005	17106	78682	91223	82971	78688
90468	99815	78139	69224	02220	59965	69932	79094	04080	66786
74232	24251	70330	91262	09355	68912	96661	67153	13462	29941
92253	94384	36540	11770	76555	77366	83318	75211	83624	32330
53662	22108	08697	50312	91726	37906	10009	28915	25505	75795
15458	76661	02770	47195	68630	08611	30428	16774	55657	73460
53020	68646	01282	42227	39343	72195	32849	66381	88405	87540
28256	03411	92796	77002	07332	05353	45197	37779	89154	38303
87490	35299	62241	27197	04170	36179	59465	39318	01340	85298



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77365	84989	17521	86996	40216	38060	22038	50035	54179	99247
98564	09578	08118	11418	42906	78422	47268	88311	82475	95915
37171	91202	13275	49335	22201	62982	63361	20829	66849	36574
00487	70218	83995	05943	43636	75253	22841	62327	24613	64369
83115	05326	40730	17580	37854	63229	91647	92765	92632	23253
79092	71196	44676	33512	01394	11927	22321	90070	38307	99723
86555	33377	40446	57482	58101	26629	12257	00015	53614	32100
93351	85950	99349	11620	62284	33313	93210	92284	93675	88780
77773	19056	25171	18153	59858	13337	70529	67141	76775	39334
76172	13078	84800	47831	82640	02881	18501	15704	93947	66994
91260	90776	06058	42048	48396	82902	69114	75762	94297	98514
89420	52217	44050	86788	46110	71987	95231	96141	15210	36768
08916	58309	95173	47126	66805	81178	63576	01825	18772	54169
63352	95840	49426	31106	26577	40801	67358	37237	04742	30815
02415	34941	23716	59285	75770	06360	49221	97070	20811	93055
34367	38621	74880	85545	47343	02245	62915	46770	76906	30021
35893	44454	79677	08449	12614	21128	37971	99205	27334	50597
23779	16329	55800	02894	85378	78085	61601	85516	80368	16427
27758	86488	00731	24755	13278	87658	93411	61897	23215	43797
26314	47193	73823	63567	62403	53768	83621	16593	81942	19120
84758	66959	40133	78418	60601	57108	44953	55535	47182	76583
88548	80290	36501	07586	31538	62513	46903	05660	59653	95970
88657	43247	42762	39627	73595	60282	53768	72987	59165	93598
96504	29518	41121	27162	41884	38587	37312	11860	32383	28128
69659	67267	11682	64014	16865	08293	64331	61993	86565	47534
24976	56101	61342	33229	84141	71359	04153	29544	73101	27893
49443	25755	35350	82605	09294	27207	90180	61397	21835	03109
43174	84438	58429	55593	18290	77373	47873	41834	81234	06291
15378	84917	59806	93088	43400	17930	30694	05331	93144	39782
02761	77455	10139	41627	92800	83302	32455	27882	21304	98277
99323	87911	42880	08801	91694	93650	38343	64739	03637	12498
68112	17668	69472	43554	66423	37308	20955	58759	44993	01751
52709	33577	43011	55471	96838	86833	20257	84274	12632	77578
28178	81438	03102	37690	44973	46333	37079	81345	47852	40187
23042	05483	65965	03410	22330	00437	77864	75060	03518	14869
94292	75630	73995	08657	04090	67839	36670	42546	47662	85563
44200	88766	51670	30853	70096	09340	60882	56796	39238	82325
41949	26318	85345	82316	47684	11315	17236	11016	77153	39994
77096	45556	98245	41062	45512	50660	39978	68138	66138	55839
64554	70172	95784	94559	56008	13110	54077	63713	83761	29785
77870	10750	59312	20509	84899	63090	78224	59536	85265	47072
84475	42203	41706	78431	51870	47386	20719	40068	47075	07306
28460	69216	62943	82915	46264	05619	74543	75570	15802	87269
39485	15469	00253	81603	64997	55681	95636	07712	25046	11466
75513	78863	31109	00306	86477	05800	78575	44646	04731	73909
35914	77883	12256	14994	95956	64968	79781	69739	59711	25704
02840	55140	50096	81588	30186	46222	12502	74890	63559	99159
34617	36056	99441	20370	76848	72598	26487	84515	61891	84437
70620	16369	93716	18983	66488	48841	20819	75031	52307	05976
70445	63247	35139	47988	28156	04077	63015	04896	13605	34246

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61721	03748	38841	69166	01752	51219	78247	70734	10493	25093
98963	01854	20841	52865	31500	09283	07363	71612	77927	61691
23932	43062	33464	15924	24387	75728	31074	53262	70995	42071
15671	70400	88477	85686	91199	11089	56188	53946	30159	59284
73782	89043	22541	79933	57728	87000	97222	97795	16128	55709
83102	95333	74207	71472	52329	37785	52626	28600	13567	45016
46384	82071	00261	22133	43136	74270	98330	82464	44016	03638
58386	47279	85564	56751	02884	47595	53203	37306	69859	22351
31677	34913	92024	95851	73195	55542	52537	17487	95617	64009
90341	27029	35388	10015	54091	25240	28945	51638	55394	00151
53694	56321	51780	85766	24303	91130	08054	93015	83580	78969
14321	34850	57577	81552	88279	30410	36607	00387	97499	10178
05124	43526	80602	08431	39622	90293	58612	37471	28521	98765
04292	67049	37226	77648	62162	92421	33333	76923	38256	78580
09273	84395	97382	42955	25730	55790	91405	34801	64616	44550
15183	69840	80256	57175	06706	71873	79425	03789	29375	04018
88721	47483	15683	85491	46116	03661	47229	63104	29262	61523
43140	44368	16104	46863	53687	53452	78524	02933	56326	83043
91908	49963	85656	41706	18596	42334	71506	69013	64856	48793
96335	20856	03851	47753	99980	24449	39005	58497	03063	68636
87866	14100	55056	01560	58002	26742	43174	30123	39842	37466
78236	79903	57595	30611	49302	87218	77848	38069	70385	36871
36780	08641	20571	13793	09612	27066	20227	50363	44940	38920
18366	06852	71154	94608	70392	04956	21448	09296	19038	61598
45576	91644	74141	23815	82267	23271	81891	31523	20613	46854
89567	21054	47503	25472	75618	13071	81465	31184	23883	03637
23892	65090	87940	33934	31962	59572	77446	83552	31265	38746
31487	44209	43610	01733	05897	66428	34733	44085	58254	37004
46686	41250	54473	98489	59263	22269	45966	60634	51370	17736
71833	75595	31885	08056	46018	99133	90402	28771	43275	34353
72439	98123	65087	40454	51519	56816	30889	15487	81497	75570
77297	37843	69199	76739	18081	58820	85890	87243	84176	35053
33099	33358	55914	34239	47499	14384	13438	39943	86175	28198
95151	61859	09679	83413	91905	36927	18890	57426	28948	02750
74862	50549	49476	62215	87910	43389	28230	64566	36542	10223
10078	82651	08775	29037	36499	33125	98741	71329	21150	07281
56261	21774	62041	84210	04967	23023	88794	40799	96828	01518
06678	84070	69595	48871	86757	92546	81373	54006	67649	56869
34845	41877	95482	84017	32677	11746	69577	07078	12507	58072
80515	53345	11650	03594	64422	97801	26586	82586	54104	26852
32368	38947	68635	82913	60872	11703	40814	67598	28132	64838
80379	42553	16780	91837	61799	70339	45738	71862	56776	15540
72433	90816	97471	61115	17983	26639	45691	24106	42223	00493
87540	87245	61508	31508	36613	00978	03175	34398	14783	88859
92059	84967	49256	33531	79632	66030	15062	01204	23499	32555
12060	41495	77722	23111	04569	70487	87652	27892	93641	51367
39434	85821	57004	00302	24395	67592	50929	27203	56495	44117
49351	81841	20972	12359	52778	14954	28085	90846	75750	72350
87831	38461	72475	26174	54460	45191	88378	78906	57966	61603
25764	17666	45682	74833	92963	48400	13993	70089	69582	82222



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26437	80025	68310	83961	94972	15323	72315	71272	28132	54926
69541	94346	81840	32370	25073	32979	45546	37772	75378	11422
51989	15674	90358	34235	61877	47304	69369	41499	12442	88491
65898	34643	46340	07789	14195	77031	94179	76270	46504	04596
61946	15619	41994	19126	79120	28489	13988	02027	30324	97010
26191	58514	42860	57235	13474	07138	13510	41715	08805	00892
32411	39136	58948	60268	99980	17465	42040	49687	31346	42819
64051	48551	64819	31103	49883	62627	81967	38604	68547	96808
47127	02361	38690	70982	29182	55610	49353	56290	60863	64983
39329	05966	85612	37608	56042	38353	37995	59683	00731	18332
42828	19215	93119	74749	01231	43201	64648	15674	91649	11914
80874	41559	70657	00870	33446	43475	14629	31571	80282	89053
90700	42746	17453	07672	63371	01001	89043	83404	07292	13587
22966	26175	15085	40523	28129	18961	59020	34377	10435	11318
23185	09653	59384	54389	40749	20996	17178	64876	78199	93162
19215	35070	48941	81116	75687	39424	98603	35416	80076	50499
73472	47371	80840	87165	01834	64836	85357	16813	04063	35411
52175	00848	56107	33893	95933	78114	71504	44275	28933	17598
86051	97054	19618	14530	89367	44812	67239	81440	83040	22263
27156	24240	12949	53482	82244	56538	00025	57788	49861	26344
87998	56428	79586	36404	01007	80414	81540	93191	81564	14721
85669	46650	58994	33647	46647	95550	95293	35374	00024	03356
72948	48729	73049	80584	47339	61586	31920	94022	13529	44566
21540	36102	51421	11801	11312	91129	05602	96582	58783	33707
10561	63356	51047	34639	09604	61804	61413	55300	83284	28188
74956	08278	00668	48373	85984	69808	04818	44925	83510	31342
65867	59252	81216	25148	56346	20317	06429	04568	08591	54958
82246	24061	78800	42684	94864	13041	27643	65513	73024	19866
43654	12830	16350	56222	94856	41992	73954	19394	36346	99028
73611	86402	78501	21602	96956	51555	18508	31283	56948	64203
52567	15912	21393	69577	76935	28055	93910	80495	48749	74114
50320	89614	49467	38904	31027	94219	94105	58822	03309	94930
03104	14551	42975	40220	48905	85275	35319	46262	04313	64939
58228	39598	51245	66151	59983	41788	61760	11584	78088	10077
66624	52596	31664	89494	30520	71663	52906	79316	57414	97817
59329	92875	19662	94247	27551	93414	99318	36369	85615	01150
27090	08032	58956	52673	42640	42215	63610	37716	47706	33887
43337	88990	66282	52586	98011	47748	14571	55132	98953	01724
64398	88518	37040	85102	15091	31282	81875	82755	65581	88838
24318	18295	38575	53256	87648	18675	68553	86497	83240	86151
58004	95558	76439	94755	27424	92032	24447	86028	58404	23965
55007	48908	54214	58152	73361	68394	83714	71766	11334	18851
30257	96593	06269	70026	97970	93436	82123	06026	98997	19558
69056	32439	09380	93591	30233	22169	72085	88986	24298	80625
72705	98991	08381	34348	01119	64586	81159	69887	78278	74752
87729	35885	64989	89065	34309	99902	44016	00553	16017	96010
70255	49084	73091	12425	40711	21218	35389	49504	44067	28793
89559	81801	83568	98061	73902	76354	39879	14777	64156	17614
43423	81125	64492	96563	18382	09479	68388	01048	72345	42563
66858	41507	53732	93995	68111	55100	64316	39013	32661	14126



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23930	04508	62244	35048	50242	67999	31536	25407	71989	45433
76128	69326	37504	75663	63223	43107	70135	10378	25207	30192
66520	29819	17478	56335	99276	92993	88457	18868	31188	41704
50626	20047	80318	92908	49020	16209	54947	20890	60384	32642
00692	11580	38646	09263	76877	05817	36856	13889	39609	55619
09979	34936	58781	30207	03578	22544	97243	55121	47763	61195
35083	82010	24906	04993	46431	41556	02842	16480	44772	65857
56834	11647	47412	10572	55006	78730	58522	66328	42258	91830
37013	23432	90997	73642	14550	51046	53319	51538	33494	74826
19205	64255	10816	06173	56554	41501	47109	14426	28435	57887
23344	07507	96976	48154	34808	28032	15431	28988	76876	45657
67901	03113	19937	54883	25893	91665	36071	66144	39757	97250
61769	41018	13717	67506	32708	34848	65378	43245	87766	56871
77088	87453	04413	30695	69255	20314	23215	99511	84106	59064
96232	51504	53689	76181	33408	69036	07589	74822	88940	65460
13738	24068	02481	10387	29920	74600	28080	75677	70120	52635
92218	25408	54086	32515	35057	92867	31816	86812	99924	16795
94886	07353	15406	50642	92785	59257	34168	98153	28959	30017
20527	69166	80257	83628	72616	91592	85581	67641	75999	32625
48816	15453	91191	25441	48827	90870	16846	32853	57113	76232
57916	36540	48876	24557	94154	74998	21646	08100	96762	54421
51631	88447	43773	49579	42127	85113	63840	02946	26197	18268
48501	25356	64351	53802	01042	04500	41752	50272	47869	87046
77281	26539	49593	44291	30014	42832	78505	19022	48837	07545
79287	83125	22088	83259	28143	61286	87926	14350	22476	63834
35196	81343	68565	02702	36712	97281	20012	41738	86025	77694
83317	90112	93949	49559	09920	90831	75864	52587	23624	34060
93588	29091	50338	02219	97553	75374	63667	94437	83366	28132
90384	84218	25670	91824	04963	06594	70740	57504	24616	74417
00774	58476	01209	56541	64937	80996	04156	27801	70922	31497
70484	24645	50762	15430	91115	48699	09595	55122	11918	33482
36071	66109	17267	28105	63786	21373	37358	24697	56603	67418
95880	51665	89278	42437	91040	81053	79349	18214	40130	49031
89442	29442	59700	87168	14045	73824	91945	07276	35416	85776
73187	98680	81961	98681	65301	84131	60475	18786	78258	17631
13497	95157	50069	43395	87718	51044	24251	02261	81792	91891
12561	99033	53230	11211	20685	15939	93411	57389	00048	37763
94780	81716	18045	36600	82148	00724	63963	49418	12463	14246
87633	82307	51079	78530	00767	22316	71326	50810	69267	67190
94324	25247	02977	79492	35727	87555	97651	30440	98015	91648
12909	54789	99445	31740	68137	14130	40593	42443	36383	99755
25781	26751	46328	49251	70727	77363	80826	31876	06019	57262
92210	18463	27662	18257	87027	77851	15603	18574	30742	65091
84392	93948	64429	71724	41328	20478	20518	38000	44084	88870
49969	24028	18581	07574	70122	94993	63242	75960	46855	76179
97371	03322	13236	81729	94425	27380	91797	40621	00048	22858
81498	08934	00375	44786	82428	12842	30514	77783	97002	96731
44151	94920	14290	96262	49573	09113	22271	27549	87724	09543
88498	00338	26288	63683	67312	82285	02392	96123	44800	12062
43279	25288	06209	91206	74234	52353	64708	76276	40513	44461

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16143	15307	50265	76233	08046	36409	87769	39700	44162	23558
03846	93854	13457	40936	09703	09718	22800	46020	84646	79401
05481	18913	85765	73483	11991	62233	31671	70640	11517	26546
14909	88639	21584	77470	66581	44108	19740	67126	23723	69366
07291	52235	24020	95439	39620	57106	98477	29360	50462	22377
13324	85026	98436	69226	06544	73800	31358	45762	00454	23428
23411	99184	68997	75425	48601	18018	91475	04419	41441	92740
98802	50684	82295	12312	60781	08689	12095	65696	13488	97462
28060	15375	29832	71902	37012	10019	36654	65721	48462	27592
47301	25731	95695	86757	96576	28880	18521	12846	16133	56442
61764	12059	32220	76922	27086	30022	39196	44522	60531	68531
41843	36863	24696	13344	53985	84182	68559	14620	20946	97051
34437	51523	82974	62369	99430	47260	38625	72945	95553	69333
84817	89509	92780	01660	85577	17764	66912	53757	99671	84159
59605	17571	54922	33311	75864	09351	89218	76965	91485	26744
89635	61029	72451	90971	62924	24284	34634	11531	12874	06277
48096	83826	24547	82738	98562	03080	28191	34920	20068	19067
33191	88105	03651	75057	79761	69868	43959	24762	89638	33247
28362	10330	85125	41800	08578	25986	24552	26271	90431	91558
92725	44352	66605	15579	65096	75214	42124	90038	99074	11543
28601	58253	63801	49976	77579	91011	37335	53079	68790	75934
53565	80880	61494	39794	33080	99793	66299	20081	65463	30600
14142	23014	84170	89253	36367	29919	33035	98671	96636	58251
35625	08967	20656	76386	29496	77953	20616	08143	32555	23412
91469	95135	40981	32231	74311	74301	90476	45777	43715	80636
39610	00784	49950	60606	42324	89429	24015	79070	69930	66076
22675	39720	34632	11489	09422	86423	48673	03361	50734	57896
04343	03434	41010	42467	28999	21845	20251	28101	16065	30954
72636	92860	90188	95428	90558	48449	88727	00786	90574	33788
10301	65954	08799	77258	07810	20140	37852	59924	02888	60316
28438	12095	22965	33139	14569	24160	20492	39242	99794	27796
52538	68238	89072	73444	84575	74705	42750	20850	48382	09514
57042	12043	56241	84032	70442	43052	48890	34368	02735	08872
93696	55833	27957	53862	28742	25154	87392	29767	32673	97938
59275	56115	90556	41624	14841	01759	97059	49260	23410	50693
00307	76848	59984	46071	97803	02422	57169	12474	30230	51684
15150	12559	24342	07676	92101	23120	09604	37234	01601	44892
43666	41823	39934	27109	16890	86490	64789	32920	45216	59786
02334	73021	57179	07476	26154	59669	91271	31977	08111	65098
77728	21112	34408	47343	91372	33612	15480	32292	04091	70727
79880	99857	28188	29120	78933	50385	79907	01952	83105	51730
83366	17999	27584	49771	29353	33312	06852	70904	18721	38085
66957	59801	14572	37202	52985	43897	38701	32250	73246	07933
39432	17914	52773	73471	89296	99236	87597	48164	55813	74212
10322	76444	40009	54067	90786	20574	88185	13537	71910	85616
44486	13991	66374	93852	79968	78530	55120	81504	20705	15996
10932	84684	87105	06788	77313	42102	24390	72157	25382	94252
47561	37322	03015	18570	12228	04807	50568	70866	62122	98417
20176	77793	34817	84437	85348	65949	00879	50989	75404	70551
80157	94845	08468	28975	79013	88325	93917	50656	31696	77981



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22719	92549	10907	35994	63461	83659	24494	53825	97047	79069
17618	88357	52487	79816	74600	50436	88823	19806	33960	30928
25267	35973	80231	60039	50253	63457	97444	13799	35853	03149
88594	69428	66934	27705	51262	63941	77660	66418	84755	29197
60482	33679	03078	08047	39891	34068	81957	02985	83113	36981
30753	19458	02849	30366	83892	80912	91335	41703	79401	97251
60551	24788	35764	57453	06341	10178	91896	70819	46440	98356
35612	09972	98891	92625	70599	95484	34858	13499	28966	88287
43713	18448	45922	55179	18442	31186	91047	37949	76542	79361
73998	97374	66685	06639	34590	17935	79544	15475	74765	11199
14971	68806	49122	16124	61905	22047	17229	46703	39727	16753
78976	48382	25242	97656	51686	15537	73857	35398	91783	92825
37868	82946	73732	63230	85306	56988	15570	98029	42208	00190
01666	48114	95183	02628	05355	97627	74554	91267	31240	34723
56638	70054	19427	24811	37164	71641	50515	88231	99539	75745
43973	07496	17405	08966	65989	68017	56975	94080	93689	98889
05540	72301	36504	00127	90375	22891	22205	27777	84803	39220
95141	07885	94399	41145	50210	92423	13303	09621	94153	18691
75954	68499	42308	38387	52163	64563	02843	45577	93125	25294
97905	05301	98496	20682	68082	68537	70220	78282	02396	10002
23458	57782	67537	38813	00377	93873	97813	10039	25457	28716
03954	14799	63187	46191	22805	50502	08810	19572	48024	58206
52251	06804	85959	20974	73104	15009	25486	09306	24721	04187
62361	59105	39338	59358	69193	15586	57695	89518	59788	04215
54954	90337	99346	60442	90933	58323	83183	90041	44236	90815
70773	03331	84228	01405	61494	72064	24713	39851	01431	60841
68702	08331	08923	83173	67081	87472	47980	08802	95495	78745
39599	33465	96705	41458	34670	55385	25484	71068	15155	85371
54958	34935	16858	16523	54262	63310	50348	53457	39440	80411
98124	08864	36485	78766	52802	56315	43523	06513	50899	86432
43099	88373	80091	35058	35755	47556	98602	71744	70442	92312
88667	44515	80435	17140	32588	98708	93010	98590	23656	85664
87009	95736	76930	71090	27143	95229	24799	02313	17436	20273
70581	40618	16631	54178	44737	02544	81368	08078	46740	52583
03723	25551	03816	97612	99833	06779	47619	12901	60179	23780
49943	30139	07932	29267	01934	19584	13356	35803	90284	97565
71559	30728	83499	65977	37442	72526	53123	99948	59762	19952
75500	16143	79028	81790	57747	87972	54981	10079	17490	15215
59894	59543	13668	27197	51979	38403	23989	38549	82968	53300
29757	26942	08736	15184	73650	51130	59167	89866	06030	88929
87650	08162	90596	70312	84462	07653	80962	96692	07030	62470
84094	70059	86833	23531	31749	23930	04763	89322	67576	38627
92101	17194	06003	99847	12781	38729	88072	92589	61828	36504
26641	99098	65294	37138	75881	12627	19461	69536	64419	82106
04920	91233	46959	14735	15153	28306	76351	28109	86078	45234
25417	97570	91045	09929	75140	43926	90282	99088	93605	03547
98874	96989	84371	87624	74090	71983	62424	62130	44470	74725
82127	82000	84618	58572	56716	79862	59896	50702	31938	18336
26311	59516	98602	47197	31139	27631	64619	01504	77617	30219
76176	03499	17999	84361	63898	97861	63620	23931	87903	91566

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13962	70992	65172	28053	02190	83634	66012	70305	66761	88344
43905	46941	72300	11641	43548	30455	07686	31840	03261	89199
00504	48658	38051	59408	16508	82979	92002	63606	41078	86326
61274	57238	47267	35303	29066	02140	60867	39817	50968	96719
43753	21159	16239	50595	62509	61207	86816	29902	23395	72640
83503	51662	21636	68192	84294	38754	84755	34053	94582	29215
36807	71420	35804	44862	23577	79551	42003	58684	09271	68396
19110	55680	18792	41487	16614	83053	00812	16749	45347	88199
82615	86984	03290	87971	60022	35415	20852	02909	99476	45568
05621	26584	36493	63013	68181	57702	49510	75304	38724	15712
06936	37293	55875	71213	83025	46063	74665	12178	10741	58362
84981	60458	16194	92403	80951	80068	47076	23310	74899	87929
66354	88441	96191	04794	14714	64749	43097	83976	83281	72038
49602	94109	36460	62353	00721	66980	82554	90270	12312	56299
78430	72391	96973	70437	97803	78683	04670	70667	58912	21883
33331	51803	15934	75807	46561	80188	78984	29317	27971	16440
62843	84445	56652	91797	45284	25842	96246	73504	21631	81223
19528	15445	77764	33446	41204	70067	33354	70680	66664	75486
16737	01887	50934	43306	75190	86997	56561	79018	34273	25196
99389	06685	45945	62000	76228	60645	87750	46329	46544	95665
36160	38196	77705	28891	12106	56281	86222	66116	39626	06080
05505	45420	44016	79662	92069	27628	50002	32540	19848	27319
85962	19758	92795	00458	71289	05894	37963	23322	73243	98185
28763	04900	54460	22083	89279	43492	00066	40857	86568	49336
42222	40446	82240	79159	44168	38213	46839	26598	29983	67645
43626	40039	51492	36488	70280	24218	14596	04744	89336	35630
97761	43444	95895	24102	07006	71923	04800	32062	41425	66862
49275	44270	52512	03951	21651	53867	73531	70073	45542	22831
15797	75134	39856	73527	78417	36208	59510	76913	22499	68467
04497	24853	43879	07613	26400	17180	18880	66083	02196	10638
95468	87411	30647	88711	01765	57688	60665	57636	36070	37285
01420	74218	71047	14401	74537	14820	45248	78007	65911	38583
74633	40171	97092	79137	30698	97915	36305	42613	87251	75608
46662	99688	59576	04887	02310	35508	69481	30300	94047	57096
10853	10393	03013	90372	89639	65800	88532	71789	59964	50681
68583	01032	67938	29733	71176	35699	10551	15091	52947	20134
75818	78982	24258	93051	02081	83890	66944	99856	87950	13952
16395	16837	00538	57133	89398	78205	72122	99655	25294	20941
53892	15105	40963	69267	85534	00533	27130	90420	72584	84576
66009	26869	91829	65078	89616	49016	14200	97469	88307	92282
45292	93427	92326	70206	15847	14302	60043	30530	57149	08642
34033	45008	41621	79437	98743	84455	66769	94729	17975	50063
13364	09937	00535	88122	47278	90758	23542	35273	67912	97670
03343	62593	93332	09921	25306	57483	98115	33460	55304	43572
46145	24476	62507	19530	41257	97919	02290	40357	38408	50031
37703	51658	17420	30593	39637	64220	45486	03698	80220	12139
12622	98083	17689	56977	56603	93316	79858	52548	67364	72416
56043	00251	70085	28067	78135	53000	18138	40564	77086	49557
43401	35924	28308	55140	07515	53854	23023	70268	80435	24269
18053	53460	32125	81357	26935	67234	78460	47833	20498	35645



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42013	25126	49296	38839	98092	96100	44205	85129	46749	47707
66261	56987	46342	70656	04614	26422	32479	41453	82281	65793
99218	43326	71220	47549	69609	05780	01070	70739	29282	98507
60246	70506	12969	83611	57725	10209	67627	07864	05937	31892
36193	05504	57510	24880	43433	20377	33928	54749	73464	40652
00531	71458	96341	59955	54799	63186	22416	45953	94761	58992
74737	91290	58472	75246	44996	62216	27970	50154	44759	77127
53061	21680	80352	70951	15425	12816	51622	32075	85276	14589
08614	40071	68920	64920	23340	05380	28335	25114	61683	57618
96656	96439	54118	52156	52621	13824	59450	01023	11607	67538
62095	88876	35524	81750	08680	17349	89230	03916	67328	28455
77889	92840	57213	80607	03600	58153	38089	99100	73014	31305
16918	23456	81198	75611	25074	48084	03581	64703	27349	74763
46268	35453	53423	93232	96635	01540	07102	35254	17330	03758
55888	65437	40317	22775	57810	31889	32922	03784	05018	37517
25423	35242	78919	09390	37512	13982	05485	86728	34392	30716
89078	42669	29644	78077	72494	16407	04518	27476	60810	25292
13192	42580	66330	68901	44233	62951	29750	39622	68054	11176
70931	04040	92715	84711	50352	92935	37042	56655	97889	87259
77128	77829	88384	34423	38977	88885	79735	22965	69877	98333
37100	95870	34423	68405	52871	15661	85110	84313	99862	10238
10308	26146	30767	59839	47405	18099	88450	98937	72828	61186
01822	07742	73964	01142	16459	36271	07333	02936	50903	53965
07393	92846	14103	35259	30109	60824	52938	31191	27402	55803
50735	71154	23048	03035	08385	61502	23161	94518	63237	16715
07419	04879	07820	33621	56625	85884	49636	57122	98079	14220
50087	54480	86002	35638	98404	27118	02877	02755	85210	29357
71772	45715	74504	54733	80412	18241	88087	40118	06232	93326
45714	59014	12114	18042	90519	52413	93567	24945	85998	17555
59220	80301	51824	76885	85646	16102	74986	65006	53715	19746
10764	53574	99564	08495	80459	85802	76505	36292	40744	19788
17678	48295	83757	65027	35491	46418	67883	72615	65192	84193
25137	13748	72617	05969	41288	08094	72739	95361	06969	94802
73983	90100	48318	64269	19759	81850	24789	55982	30526	22676
99383	86972	98698	53377	78399	75624	77124	78996	42364	04273
81463	95646	47319	48775	93940	51645	60109	18278	29681	77883
47218	25488	68262	21410	61186	89952	11764	79953	56457	95497
81348	41579	58825	22003	49490	30865	37291	68696	04454	88205
87900	38409	86023	52902	65419	63324	88553	23217	25332	21388
55171	74690	78509	82507	74217	61944	45093	20674	95483	23757
72273	88384	07084	32642	58395	87752	57079	29525	06486	47759
31315	92691	65161	01439	80177	42240	87554	50096	89808	01816
14727	40472	08302	00582	81954	46590	43884	17637	88473	20390
83748	71311	64473	73025	90187	37261	38389	62432	31440	59825
88824	06478	50725	76185	50468	38948	23682	11328	77542	88781
15674	10172	11670	56256	01649	07564	38895	01649	51479	65397
27554	23402	41542	24214	93388	67693	29967	67477	04991	12243
37635	96312	73891	16729	11725	76610	39574	99565	36190	32008
07476	42396	95670	49941	51549	07010	53100	48997	33188	29414
66005	72644	19812	65399	48215	09132	25707	73648	60225	30702

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52534	82857	47299	48748	72888	31705	13867	62620	68513	79149
88602	31385	63436	43035	10815	07119	35964	30360	63656	60661
91400	63007	97273	32057	91951	46330	12893	86602	03710	56516
80753	34577	58421	51026	28514	06233	70431	42107	97639	90818
35885	86909	61780	30921	33258	12960	84640	11301	05409	32044
93990	99581	70584	49811	43933	14954	49446	70379	27056	95378
09614	57360	60566	71263	39899	98163	43014	09500	47266	43147
06856	28724	93988	77589	22748	32910	14649	52967	34718	90217
79287	76856	85097	14422	94957	02732	73579	31711	52065	41789
63180	07117	50802	57008	72837	88961	86536	54036	01747	59887
09472	93904	79062	09699	06683	39134	22416	66211	31214	81730
15627	05471	52308	78528	25876	82840	20825	22134	94528	53834
31677	96908	03890	21314	64503	80250	90814	92145	73283	60898
65093	27865	69792	50778	30718	32243	52658	83178	67131	95642
01874	79890	73607	21145	65168	05079	55896	97865	93480	92630
70378	46175	35976	11715	13058	69755	45829	86870	86083	32591
27728	79685	87000	81766	13756	29480	63335	37586	03953	15324
39542	43035	24562	93335	00849	57574	20158	04989	41399	84132
15083	24701	87498	56370	41122	66845	35060	75773	07576	75952
38208	12759	03955	72612	18824	70458	73336	17085	22792	20258
15282	40571	74608	54511	01418	63856	60915	16317	60816	49287
36061	06128	71126	47235	87258	98985	91898	29157	53154	15095
66755	02682	33789	88898	29899	03361	80922	66412	36269	15562
36558	16521	10515	82211	47412	59691	15381	93119	31477	83235
48090	82667	87063	61246	10231	39794	18043	04686	49861	88349
63465	99694	98810	44399	90063	42883	40735	95238	44447	54255
96395	05290	86695	34823	17766	89280	86992	56403	48722	89742
82253	29278	46716	17003	16278	67634	46388	46708	48283	64313
22288	14812	38440	61537	68293	68072	81028	50708	40678	75296
35481	12317	84403	27489	14825	68187	86422	66783	00748	81409
05628	23186	49976	51151	27859	53810	50390	21892	36258	76361
23071	52184	85989	74678	20590	84137	25824	33136	56998	20918
77886	44504	48977	07431	29133	31306	19685	45540	78390	39250
99517	36561	13069	73593	96267	34628	01825	11804	67831	49082
55302	19261	76761	17529	76210	13943	25544	59446	50749	55514
44083	43083	43603	48769	75463	96623	84077	66487	06917	78976
98302	35491	15837	75768	25722	66625	73375	40050	29995	30804
56887	14082	29531	46695	63224	79911	69596	81584	80995	33835
67921	91143	53255	79854	08527	13399	74312	58701	71350	85986
29088	87873	31377	59474	68647	31290	64092	04332	60435	15943
75682	95072	81979	08783	39007	64506	38531	09770	69281	78108
17748	60659	16166	41789	99067	79611	16400	73810	00030	39514
75168	24241	75997	82268	18396	35742	22967	65975	60427	04488
75091	41347	29533	69180	76810	13149	36522	70276	69792	30860
93673	57951	74687	75747	48063	07832	99227	52971	09475	71006
69834	52374	59616	91240	18688	84379	31381	99735	95153	94818
96128	64581	02975	98263	59500	96218	18273	30260	04603	41966
98609	81146	56638	77827	28671	58102	92651	24204	25081	50459
49501	76986	33488	89038	45521	26386	07564	31116	06500	51750
84477	65814	16334	14684	25142	48115	52182	04834	70368	69631



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77012	07384	73077	58917	90883	74805	32390	45582	23330	69756
99688	96577	36515	53327	27830	78936	03391	93326	41244	81366
20302	92144	50915	29248	36120	11778	86630	76882	41739	17986
87101	03409	76898	41137	43948	86332	51689	07086	70734	05550
81969	35233	89022	76526	43304	36463	83480	59540	47470	69287
34807	08126	85164	30912	62625	53139	16842	09266	52532	46581
80291	09797	06976	65531	94969	71925	26860	95874	35446	71293
00849	40816	97682	40753	67140	09518	54907	73276	11899	98687
34082	67803	78386	96338	90435	33261	72133	88780	99020	97004
48144	36678	28842	99910	91250	19469	81431	72494	37623	22987
71923	97743	68311	35887	84390	02619	02411	43127	51406	68460
97766	61888	77653	78082	32839	10269	29426	55488	01517	88955
18801	39524	79790	74616	77609	74732	61525	92718	25394	51080
09013	01087	80078	15951	91875	76013	13021	62817	71591	97002
13048	51611	74386	99985	44431	12773	90146	38524	22724	27506
41789	61818	51838	46690	75215	86387	93567	37939	30734	19879
58001	25588	78572	27581	72758	45851	25995	26819	21913	10179
75657	91363	06883	63767	13608	42773	63539	18529	31925	28668
59445	80665	88151	12051	63428	35053	01179	05254	68537	42581
44889	04294	07799	67874	79841	92780	71505	06464	76839	63347
81237	64397	68539	66659	52781	60654	84232	53804	65075	27220
10679	50334	11422	02765	29241	22632	91788	67316	68237	64200
58973	65467	38950	87853	16905	90671	57147	30893	06623	41475
49234	68411	12338	15153	83208	25784	40268	38287	73891	27376
36185	81850	31507	60906	23892	59827	67797	62799	91022	79253
02697	19279	56989	81942	80964	67913	08399	73386	94867	67321
55830	02431	93205	79197	74599	87585	74438	83704	21945	15137
23957	75773	68884	31936	81490	45020	55818	24592	84987	50474
06343	44395	48564	42993	65735	44594	57843	70724	92870	32617
39485	98566	02373	23953	30520	93264	31347	23349	38934	45635
48876	74880	49887	86365	18299	97041	31641	05984	88948	70140
13551	41581	09044	56419	16195	46709	05714	53352	19679	87224
74692	76567	86266	19132	45849	02131	74225	04155	43997	62830
29131	83732	75242	65232	08872	43279	00809	97046	28851	15337
38528	48380	94012	44693	53843	24203	04579	95053	43817	62309
45021	72055	37371	44018	98373	48304	90618	42059	97379	10602
06474	23471	13782	32396	97506	53770	03116	51076	66798	64104
83575	05580	81439	06635	02816	51003	78830	02038	76344	89083
17007	74305	01821	41041	42674	44803	36700	74785	25617	68049
37606	40561	54302	99589	22671	34258	26432	06732	00600	93367
17936	91024	84985	03289	07721	39729	45809	80821	39587	07684
34330	18439	69577	37771	68254	90970	10173	35598	82336	74141
69074	10171	17991	65383	51863	38535	01224	10097	14548	98917
16723	63250	14038	39436	46531	29073	50638	25920	04575	78448
97324	63679	10177	05637	62994	20462	61271	21702	84168	46679
02085	54343	26238	58376	39827	35866	33987	79586	29719	47766
56224	99229	54362	76943	13980	83508	22616	15862	84824	89884
96214	94020	06341	78763	62643	83854	16712	91383	15935	82958
67058	61329	23706	22885	44251	27633	82942	79253	40230	07629
95044	15713	92819	23532	40332	49307	57167	24892	63015	43145

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88115	59359	88857	19687	34108	33685	47395	85450	74431	53889
28073	71635	12335	70915	34263	46352	13003	75724	91414	70539
32924	78792	18933	91796	63082	95063	10456	61652	81171	64157
79599	42519	05201	17045	39382	85426	78979	45796	77853	37515
67006	80140	74512	12408	64096	48444	88584	30026	86203	69963
53957	07994	42002	12668	50178	10182	60719	91408	52581	31505
49498	88978	17442	68378	54770	03452	35732	66049	71522	78488
18990	45671	72172	37095	63197	35698	27050	80879	22214	17387
56316	57505	67778	56592	42765	46357	21105	62470	27862	30463
90133	09824	25398	50303	93421	45316	67491	08712	49107	89776
53760	25900	43391	18319	08120	63323	15314	18931	06321	67593
24233	68519	57668	89044	21821	50937	98675	93242	03575	52357
11980	81333	87078	85924	87322	71992	37385	89058	03613	58247
72173	21019	66804	98240	86312	94275	65750	39800	89690	79511
55332	13184	41987	81401	08589	19763	15911	62758	90384	08462
57607	25649	41487	81745	25535	45433	38792	67984	14297	03353
69686	81509	19028	75140	03866	82198	64457	32441	90153	47008
34130	16327	81730	80949	11124	64870	04745	32499	40333	61195
85721	82231	09296	43409	80316	68520	05796	57927	49096	43765
40694	73282	88363	23493	66853	05007	88903	89201	38588	74264
28790	73555	39872	82425	67586	04692	58763	73089	62844	07701
01488	66532	81453	26070	54050	21033	34261	62446	04251	88138
95499	75165	80569	89454	25994	26350	81331	66392	22865	38179
23246	93026	49835	68011	46709	97573	41406	87120	23019	76957
54372	71661	98259	03429	90265	78363	79075	69264	01258	25346
50667	67447	12042	93977	84144	57085	92362	17519	44003	00728
39015	09690	22308	55079	46001	52100	62325	34030	86493	05479
30848	98916	84404	69121	62466	64858	20484	41417	70154	54470
03889	22848	43778	74537	75257	60289	91993	33513	47265	92628
94392	05327	45485	23672	49212	40702	27590	45199	41120	28897
68181	66796	01111	81046	03106	02797	46778	06137	74457	17698
54283	10083	48124	66874	40560	20775	77508	24814	42647	61096
48823	58942	76779	11831	71291	30891	75550	08406	35640	97312
24114	27526	36778	52558	03349	27244	32784	31944	04514	79805
58250	09433	49922	73517	05749	29521	11486	35378	02951	19991
53805	24698	90621	44865	30020	79181	27710	77898	18641	25822
67094	32424	78081	01866	06524	15797	50526	19737	46728	47806
96327	08369	01352	81145	76239	27756	92892	40249	12677	20351
96304	17442	26193	50470	40080	45962	27413	52596	74767	15419
14320	29318	35603	67402	11237	10278	34135	11550	08956	78074
17503	66734	92657	25594	48869	45477	07566	01028	98648	11852
78373	76435	19095	11690	87307	86055	69098	79807	32699	21694
78058	96964	06841	98848	17419	09237	80180	37075	15571	75381
74417	70127	90585	33464	32119	49159	97364	98803	41313	52271
05478	71773	34259	73504	17136	90957	04215	79673	59041	58532
95594	70376	56991	94958	73025	72241	18772	83987	66214	96335
86317	76771	66837	10831	54982	29193	64089	48005	22480	35522
71728	32787	76084	68563	38031	65199	70118	82010	63048	89269
39979	10146	27776	94907	33324	37254	91599	06189	53170	95295
15592	60403	42603	96773	89004	87192	57567	05696	98464	98800



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70926	14068	90617	51352	05865	25126	21435	69981	06479	54942
38294	02507	86133	45888	21711	98619	05872	54301	87716	26002
51447	00598	36601	60566	32418	06444	18754	79000	29678	33535
33733	65492	09115	87007	43944	90683	36936	70086	26343	44499
98578	16717	53459	98243	68053	14785	94556	24145	73756	02966
98045	35229	65436	97032	90692	92839	48741	46015	60649	78986
11030	27678	40435	23421	30446	68355	41264	56845	25972	24239
06398	01268	40461	42165	76730	80605	64851	45178	40698	45023
66982	99502	99638	32288	81444	22186	99057	35949	63798	62111
49990	41133	65203	58173	33477	09119	34541	41143	46943	46256
22975	87537	49981	83262	55604	56229	84786	38692	16164	86948
56363	46172	55878	38017	28757	23228	36018	72170	51051	75235
25239	51964	68059	75456	39179	09456	92300	65626	48879	31402
59897	48512	00334	45937	19369	41725	17979	02825	84411	90936
07445	43199	11331	84333	24530	07944	18773	94012	01441	40655
52821	36525	86483	01485	27152	22479	34278	29029	82444	32543
04483	39213	14609	02255	65310	22945	48013	36887	71101	33008
85207	37425	35526	59376	85614	97070	30842	27193	62451	28179
36385	78567	05346	74610	26141	87177	19154	53851	05824	59090
55407	39812	30331	60144	17516	98353	69388	48352	58137	77898
46331	84545	74655	37810	71052	47561	38516	00995	29132	67466
04897	76974	58825	06219	35829	94137	86723	33959	58960	78467
66731	13895	78598	34046	33819	31321	28214	15552	79956	93786
43230	46708	41391	27181	83392	83917	50354	06317	82244	64964
66454	90538	67155	16330	47634	26177	91044	95720	98046	97875
15390	36462	55477	37908	88709	79835	02268	34899	43576	94090
46247	72875	26162	79014	84526	95251	08529	38081	20459	00237
55637	15060	33992	51861	89417	48441	81158	34236	95130	56722
02487	37297	82484	66076	52244	52682	24153	95903	16593	16839
42610	30603	43360	37782	74207	42717	30680	04798	49349	80247
76181	27103	98753	17717	75804	70789	38568	18708	96245	97479
24240	59688	23292	40949	74821	74395	15182	28469	39961	16523
81005	08991	34680	03514	44197	25382	59596	78425	98515	94769
56871	37208	97581	82371	26370	49617	59215	38569	14739	48414
33208	81662	43605	20558	79985	90844	17530	99091	10285	21540
43803	95466	93094	97246	31204	85156	37718	08525	91170	63419
39723	01384	22765	93642	60124	99086	45153	32542	47145	48575
62515	76499	84234	06259	51069	60919	55124	78419	58554	94540
45055	24644	30258	39939	53071	26932	18676	19285	62417	63764
69681	82442	84755	30753	38850	46942	61530	59202	11087	18121
83385	60015	99787	68177	43030	09512	56402	52055	69511	95801
04458	50325	13625	59771	52638	03817	31659	90880	61424	19064
35754	46420	40662	91784	10383	86003	18461	37487	07663	29044
10162	66613	00105	17031	85743	46022	84098	48084	05707	94180
89831	87771	78854	87869	25562	86955	25525	10040	73737	96766
55684	77321	42361	69034	44115	03720	97262	71890	16199	59265
52365	07152	28678	69439	55376	06525	59029	29933	27542	74515
33636	30300	46185	47790	80994	17002	12405	42203	99491	54380
38313	14021	53007	04659	93128	86269	29475	28220	71108	33211
12929	16404	65222	46174	52721	30713	10441	13115	06313	78985

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11767	41715	96921	39440	91713	01252	95477	90091	74570	47814
10209	39469	04395	96949	68306	59930	43058	74922	84796	25716
88035	86619	10325	12403	59223	80176	03721	42071	86811	58308
01488	22623	75963	52672	08033	94360	23673	80897	68904	98109
85453	72323	32385	04738	68076	97592	19285	41760	42244	51078
94870	60073	79608	75998	05122	18855	98943	26426	84879	74388
92793	48899	87556	46924	20939	72246	53768	14024	09495	40912
02048	90603	58746	02696	73115	25929	51870	61184	65085	78295
99402	91657	18017	77315	39059	24381	21328	36197	89852	69923
52804	36184	32274	65204	35397	44192	06055	60314	10940	34627
74967	53533	93594	69969	16216	97183	95154	37719	90074	06928
15360	86221	06240	68606	05993	28257	80451	90422	20624	31777
53092	10820	71341	56926	48072	70936	33884	63004	81011	90241
78293	43707	65260	46559	21593	61172	05802	48592	96801	88425
24698	22898	26339	77971	47433	41759	74193	54506	04385	71026
36341	31972	45946	23649	94999	27633	01609	19345	83854	65117
70032	05924	91583	26358	42395	85283	36548	48571	90295	65056
58505	19927	12491	29716	88554	84748	75150	20811	92332	52934
73594	99247	47006	04316	15214	68184	50502	00906	58323	81340
76445	56970	29913	49346	49418	89565	90371	02911	18781	49995
25906	22504	11638	73444	50364	29434	37229	81270	17091	08384
30906	29090	62259	64926	45247	63145	97190	79048	25472	63993
65174	27188	78410	88819	89691	71654	85623	76958	93888	34121
95707	46159	04585	08264	31148	55333	66354	20732	83733	71859
86800	89098	64605	45971	11658	89650	14679	29076	11295	26756
27050	19535	80967	86429	53087	24524	45176	58099	21062	93277
10321	30484	20157	44523	17221	52332	02171	69984	24729	45615
81688	67931	83947	92274	47572	05921	73696	13267	12007	36060
87754	63269	20414	97007	85234	02765	25037	08013	58209	32893
61003	95084	61292	17324	93461	48671	92398	73811	32577	03895
92634	41808	82881	62269	33536	15206	06382	92818	07525	18506
43023	46101	12756	91289	97832	03007	11112	83193	38078	10928
56571	76602	83541	73035	54212	82112	39610	98224	02571	03610
02277	75958	49212	59055	91260	88372	70664	91292	17350	78812
26333	27670	05556	64366	57386	17327	60852	92021	15754	55988
58163	45678	12771	96906	76195	16623	54681	38763	44930	12599
24866	01275	00882	31104	25970	06468	59772	11493	25244	57906
86997	96175	69773	38015	23916	94438	43706	85667	87188	72475
64237	20191	40654	96516	81157	18779	32641	89064	70199	22278
50601	68108	35854	45951	96090	18262	21094	13284	03783	47529
76183	41550	85252	38048	61986	96431	58408	90223	36116	13558
59038	73354	29214	64984	42285	99793	79106	35548	59039	40442
08430	83898	82979	99138	72201	37238	62822	29049	66756	80217
28493	94724	84455	17948	67633	89500	41013	08398	42274	57451
00322	75838	71501	37001	36824	74950	60632	11372	43392	66804
99942	82603	23184	26296	50994	21524	46967	28332	19674	32822
97872	36870	47178	69926	36075	93302	04530	10172	04809	96867
64219	06580	26192	82666	74607	31539	77593	73076	41422	56992
58098	55623	26057	28619	79776	69449	97532	09986	68865	92882
89624	83227	06730	16023	23771	51774	40547	13335	80053	88160



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99275	48612	21216	65329	47006	81802	25488	71983	53254	49130
93487	83437	17776	85952	25025	36775	48054	51516	34250	80153
77638	96966	33408	52567	97394	44738	82972	74641	10629	27328
13771	86099	85457	58571	84468	13977	68318	67241	81211	50595
82422	08792	07864	18509	17314	57017	41471	01334	83346	52276
79394	17748	90396	44781	82857	73286	98281	05360	64793	89261
15053	36157	18243	03108	81691	95429	61175	63251	51012	30760
30831	20830	21955	49948	55957	13305	47123	90904	83261	63990
61512	40712	24620	52733	44361	69509	14503	27507	11978	53166
52270	08623	15054	40687	92854	34969	25843	05886	23848	37815
69103	56560	84932	19661	06307	56052	78502	97906	53173	20703
73582	54875	08117	98969	71713	04025	91705	35226	26130	20635
91009	80511	72733	51864	93842	41062	34805	54917	58877	06764
57300	92584	28176	93034	51982	67445	81231	35754	08862	16353
92344	93509	93644	67316	55786	46115	81226	81580	56533	28894
92749	83442	68882	04917	60100	60970	89024	26833	22520	14141
42831	12508	45484	77529	12684	74732	97088	83012	10059	29112
07745	53194	02923	61074	63854	76031	53621	82550	48493	04735
45498	56291	87859	53926	31865	91287	32266	51667	11757	85115
09182	74356	98937	05305	44177	41774	56282	83432	18409	59954
66926	27548	13360	74005	81863	47185	45649	98578	33918	26819
29434	65828	22535	71027	81963	89151	85892	46253	32153	62668
42571	68007	13720	72268	36932	83209	50630	86254	99242	84871
44191	51743	00755	11342	96156	70667	92793	64207	00908	20585
74446	78425	06622	18035	10454	00769	82604	23280	31513	80496
01361	80115	72935	17163	22449	53094	44751	89764	63157	10031
12978	51982	49118	56362	57711	86799	99400	99659	94439	72369
61774	37757	07413	39789	32552	79649	50218	18721	43988	44445
38043	01415	45193	84171	52383	92519	94553	32365	46859	74074
15829	42557	52816	20654	41230	92652	20289	18515	59762	77168
65919	70072	05256	51571	82292	43086	03342	00323	34974	27538
42819	32053	60657	82161	35440	03414	06554	36616	95862	14257
23139	91838	52934	54293	84798	35913	01191	24708	34713	37519
19405	64597	82153	40667	49899	84924	49530	56359	42477	08924
07288	45243	60807	81236	70539	14403	92228	85675	29187	93505
69116	89344	12029	01539	93894	65818	59005	07675	24657	68510
63194	11499	17269	88825	33188	65639	63508	66633	68749	38774
45783	92486	36117	48960	28351	14145	10509	87554	58285	72322
07396	88455	49617	31643	59540	77294	84426	31160	54194	05018
89360	23385	55210	93043	02738	29451	16953	50118	05254	65817
73831	35096	11635	69913	59826	49421	30885	99775	94291	39334
52665	80524	66871	10050	20685	15957	17210	61591	80857	13700
65846	39590	21711	76563	70545	01898	13150	61557	28181	68003
53627	91900	09405	76537	98930	77889	57807	75958	91341	58920
70669	44663	26954	84605	51598	23696	28725	09031	66099	05956
62677	12248	24848	02140	01131	56569	13528	24145	45199	09776
83555	56534	67758	71368	26859	95717	28288	18551	30987	20330
83697	77759	52073	04864	55059	94511	15250	26670	78996	64549
44903	84173	97008	84837	53936	01667	37797	55720	19801	69681
49014	65018	85266	95013	10543	74324	00370	44692	12436	62278

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48891	10539	77297	06672	60476	03209	56167	45544	78258	21422
73871	02158	64630	46343	47332	15481	71394	96315	73568	80645
34170	02175	09960	18993	17807	66444	32730	21212	46076	25920
71583	99318	45044	48166	87077	55556	63659	33391	85205	13101
01108	73834	09699	74820	30068	86921	78110	28980	24355	68185
20522	12904	93684	21725	57411	71846	80425	00453	19748	21457
79608	42670	40653	95662	12532	49174	48503	67040	69216	27753
68090	48226	92873	37646	30421	74228	35929	44178	28348	91363
19084	66561	09518	45488	31864	35233	62351	49727	02447	07250
07646	32173	72941	15268	61602	62354	27853	58697	90386	37514
63196	74349	39550	70915	83488	07746	17894	50004	91058	41346
86398	28564	87112	86288	97693	26056	17915	82559	35381	75027
63642	03881	57412	19351	27350	31510	45854	15923	02510	43820
71121	53702	40309	92143	20328	65330	63967	19131	85795	53721
13701	53089	57760	40693	34610	98600	45016	71126	59165	50190
71134	32621	80057	67356	89035	65907	57480	04850	92464	32201
33767	36215	39791	72287	29800	67640	97975	74758	46021	73423
33146	61482	78422	55628	18394	48569	51299	86059	19323	41580
36625	32972	51316	64412	82599	79023	38452	03155	74595	13130
63621	36578	05384	34537	25673	58665	29591	66953	98274	34545
22624	74007	67711	37494	37526	00412	47081	69740	38591	44042
56577	81154	72712	59626	77020	40221	70415	21555	13815	15936
68561	00765	43531	76052	72134	75017	93077	40022	29505	76950
29278	37732	91524	28033	49045	23812	81820	66774	33620	64598
05725	26121	68728	96440	70878	63396	59123	86114	46700	98438
12415	12423	39879	62843	88286	04293	49225	20626	61318	10872
56651	39944	91948	87327	20492	92155	94238	75984	73002	78618
48493	98522	25685	40367	43342	52382	28333	30879	59352	86497
25123	62925	33514	71567	65553	97229	55058	40209	62112	18160
85607	00506	63005	26044	87342	39708	30757	75972	54177	31864
16373	13846	52495	45645	10162	39115	45771	25100	16356	37750
40801	68181	06980	50698	26657	94736	02366	84979	18942	84572
32100	76474	58798	77166	31884	50951	29955	94471	53066	46180
76932	16642	68834	38684	07709	97540	70322	32654	85262	92296
57106	64646	95365	10663	32804	72795	25166	79078	26789	51843
05418	98621	75977	52630	27675	96279	13152	44711	46961	45757
37221	69111	23417	17803	11075	66454	95453	60328	68808	98125
23823	99934	93432	05912	93150	84781	99233	03767	24838	94955
84321	03554	23836	64544	27469	23266	57244	28275	82170	07575
02344	23656	61016	09765	19867	21790	46457	25411	03500	46762
70325	88171	23685	97217	76585	88384	51221	31272	17338	80422
22987	01461	15898	25857	74145	84101	90051	36721	45737	65918
83159	50055	54172	05122	07096	55938	95953	33901	54679	64178
68181	68525	53187	92984	58323	41389	66592	56584	14326	07823
65843	69659	40222	34435	50890	24504	70304	43227	29870	44698
54251	76480	23860	30082	69132	08840	98017	54350	66249	75725
42504	70709	53223	89394	66872	79919	06562	25977	42529	78046
56201	69520	52851	03783	60280	27101	07911	12147	97079	52817
25284	80305	76573	14254	56770	83548	44466	06063	04232	62838
00702	10030	47850	44094	84878	51686	39037	19661	73877	24708



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57045	08074	88727	91303	10880	90387	03049	44649	41682	07161
92889	33197	04117	79760	15336	25030	73686	24054	08666	24607
06135	40078	34575	82871	86196	69883	71312	99329	34122	63290
27526	09658	27405	99448	02380	71414	48311	18536	45957	52546
32443	44984	94521	49020	45683	50812	57968	56310	97631	88709
34091	84585	92750	72213	03810	84047	17607	87085	12607	62564
68190	21907	52999	14903	80020	49368	63721	86548	80086	51686
05191	64586	50535	20491	87132	18487	34210	66368	52881	83704
78088	71769	13917	08311	88957	91965	22411	52575	44377	32138
34271	03646	95035	67881	17645	34452	47064	84451	57918	48975
76667	51400	93187	10311	92693	97380	61008	83243	01776	05137
80232	15879	47748	03011	38553	29224	76115	36026	01249	61250
53017	39124	84777	80739	87900	74156	54184	24003	45929	23730
28699	18974	35297	40752	31285	02656	34584	71261	28462	33431
35394	84361	77346	21801	39236	24825	77081	88028	12544	07565
84813	25422	08800	36063	94441	88637	50780	79144	71908	51899
39900	30333	13938	22799	30507	56296	43120	47179	26489	54531
99174	36078	79599	06223	38520	31678	97203	14143	17457	41301
53762	31370	73669	10523	08875	22489	69203	49879	77277	81867
72787	78482	19585	45029	31822	85128	29960	54344	44851	75381
82163	23362	09644	74123	06831	83252	16929	33737	19381	21302
62357	13766	93851	27009	42621	13612	18873	76885	78819	55665
62350	73856	33253	02353	42231	21028	27646	23292	94705	70722
84764	94194	97699	27029	32935	51595	04454	91100	67131	09041
78327	42124	56300	93706	75936	67290	59600	20201	83979	73231
39284	08465	61364	37573	18285	64619	20079	85596	81849	81686
73507	00339	10678	66490	22653	10032	68648	79622	98925	99635
77675	53001	74015	20232	61900	50260	60094	57780	02739	55069
55144	58892	57952	65272	56004	41356	00190	17413	64296	60680
69545	93269	67239	96561	07443	72133	62418	17791	02994	02665
24029	31914	39122	68971	26865	01521	49285	71212	00822	25330
44665	26518	13219	61450	13321	52526	22629	78390	30087	17735
13196	84012	09819	55245	97721	11900	04586	91248	15214	61259
66401	50382	14549	66579	77859	30100	79010	32512	29816	07127
61962	67996	12828	22706	72646	79669	72214	52460	89227	49089
06771	43014	92202	23860	29456	38047	44988	15786	03658	25037
56042	94875	92991	24042	92395	30212	52225	50280	12944	79124
98428	13542	85663	66158	57744	41097	56298	84834	81051	10048
85814	29832	59007	57398	01033	52085	17512	32395	98564	82408
99657	30745	72197	03217	11839	73768	49206	96954	94375	70130
61069	54986	13341	89688	70977	32056	81627	56776	12859	44176
61108	30705	46984	74866	65173	80340	43903	66334	27757	95664
25672	31476	55896	46337	25418	76725	33877	16903	03276	13106
11136	98716	28020	28414	92289	22989	45797	16935	49843	98385
88537	12364	87867	50446	37446	35919	69387	32296	37350	25132
83003	85363	97045	18857	67214	15043	05498	97716	85302	70414
82128	04345	08532	69206	36560	04641	64006	28763	89057	22560
21388	13394	80549	87537	11673	98421	34723	30630	67516	99516
29672	42547	26085	15173	44457	13154	98748	31213	87025	16793
65120	17193	77381	48198	72074	08512	43387	27964	86082	57332

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14541	36678	54343	94932	25238	84928	30668	34992	69955	06633
88626	98899	01337	48085	83315	33563	78656	99440	55584	54178
31466	87268	62975	19310	28192	06654	06720	64938	67111	55091
52738	52893	51373	43430	95885	93795	20129	54847	68674	21040
17444	35560	35348	75467	26026	89118	51810	06389	02391	96061
62596	56854	76099	38469	26285	86175	65468	32354	02675	24070
38338	83917	50232	29164	07461	25385	84838	07405	38303	55635
29163	61006	98106	47538	99122	36242	90365	15581	89597	03327
59049	95306	31227	75288	10122	92687	99971	97105	37597	91673
67447	52922	58657	67601	96148	97263	39110	95111	04682	64873
57082	55108	26992	19196	08044	57300	75095	84330	92314	11370
00179	04358	95645	91751	56618	73782	38575	17401	38686	98435
65420	87257	44374	54312	94692	81776	24422	99198	51432	63943
52450	75445	40002	69727	29775	32572	79980	67902	97260	21050
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17066	64286	35972	32550	82167	53177	32396	34014	20993	03031
86168	32643	23668	92038	03096	51029	09693	45454	89854	70103
33632	69631	70537	06464	83543	48297	67693	63137	62675	56572
77915	56481	43065	24231	43011	40505	90386	13870	84603	73101
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55809	70237	10368	58664	39521	11137	20461	53081	07150	11832
50948	64026	03350	03153	75913	72651	28651	94299	67706	92507
27138	59012	27872	90522	69791	85482	80337	12252	83388	48909
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48895	34733	58057	00195	79496	93453	07813	66038	55245	43168
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95913	24669	42050	92757	68677	75567	99777	49246	93049	79863
12981	37145	95773	92475	43700	85253	33214	87656	13295	09721
62349	64163	57369	65773	86217	00135	33762	72393	16343	02263
68193	37564	56257	50030	53951	84887	34590	22038	40629	29562
56203	82226	83294	60361	29924	09353	87021	08149	11167	81744
31945	23224	08211	02562	20299	85836	94714	50278	99818	62489
68726	52274	59535	80873	35423	05166	06911	25916	90728	20431
79557	25747	55585	93461	44360	18359	20493	54287	43693	88568
05764	29803	01819	51972	91641	03524	18381	65427	11394	37447
30187	66931	01972	48438	90716	21847	35114	91839	26913	68893
30858	43646	96984	80412	91973	81339	05548	49812	40775	14263
85117	38268	18921	29519	33359	80642	95362	22133	40322	37826
59422	12752	56798	31954	19859	32451	04433	62116	14899	38825
73479	91833	91122	45524	73871	77931	67822	95602	23325	37718
83648	66882	15327	89748	76685	76282	98624	71547	49089	33105
19454	91265	09051	94410	06418	34484	37929	61070	62346	79970
49327	97807	61390	08005	71795	49290	52285	82119	59348	55986
54482	51025	12382	35719	66721	84890	38106	44136	95164	92935
30487	19459	25693	09427	10967	36164	33893	07087	16141	12734
42998	68627	66295	59360	44041	76909	56321	12978	31304	97444
03668	61096	26292	79688	05625	52198	74844	69815	76591	35398
45074	91457	28311	56499	60403	13658	81838	54729	12365	24082
58444	99255	14960	02275	37925	03852	81235	91628	72136	53070
82912	91185	89612	02362	93360	20158	24796	38284	55328	96041



## TABLE OF RANDOM DIGITS

44553	29642	20317	69470	57789	27631	68040	73201	51302	66497
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29742	67676	62608	54215	97167	07008	77130	15806	53081	14297
07721	20143	56131	56112	23451	48773	38121	74419	11696	42614
99158	07133	04325	43936	83619	77182	55459	28808	38034	01054
97168	13859	78155	55361	04871	78433	58538	78437	14058	79510
07508	63835	83056	74942	70117	91928	10383	93793	31015	60839
68400	66460	67212	28690	66913	90798	71714	07698	31581	31086
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66220	81596	18533	84825	43509	16009	00830	13177	54961	31140
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26748	19441	87908	06086	62879	99865	50739	98540	54002	98337
61328	52330	17850	53204	29955	48425	84694	11280	70661	27303
89134	85791	73207	93578	62563	37205	97667	61453	01067	31982
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54576	02572	60501	98257	40475	81401	31624	27951	60172	21382
39870	60476	02934	39857	06430	59325	84345	62302	98616	13452
82288	29758	35692	21268	35101	77554	35201	22795	84532	29927
57404	93848	87288	30246	34990	50575	49485	60474	17377	46550
22043	17104	49653	79082	45099	24889	04829	49097	58065	23492
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96056	16227	74598	28155	23304	66923	07918	15303	44988	79076
64013	74715	31525	62676	75435	93055	37086	52737	89455	83016
59515	37354	55422	79471	23150	79170	74043	49340	61320	50390
38534	33169	40448	21683	82153	23411	53057	26069	86906	49708
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38633	80107	10241	30880	13914	09223	68929	06438	17749	81143
48214	75994	31689	25257	28641	14854	72571	78139	35508	26381
54799	37862	06714	55885	07481	16966	04797	57846	69080	49631
25848	27142	63477	33416	60361	19781	65457	23981	90348	24499
27576	47298	47163	69614	29372	24859	62090	81667	50635	08295
52970	93916	81350	81057	16962	56039	27739	59574	79617	45698
69516	87573	13313	69388	32020	66294	99126	50474	04258	03084
94504	41733	55936	77595	55959	90727	61367	83645	80997	62103
67935	14568	27992	09784	81917	79303	08616	83509	64932	34764
63345	09579	40232	51061	09455	36491	04810	06040	78959	41425
87119	21605	86917	97715	91250	79587	80967	39872	52512	73444
02612	97319	10487	68923	58607	38261	67119	36351	48521	69965
69860	16526	41420	01514	46902	03399	12286	52467	80387	10561
27669	67730	53932	38578	25746	00025	98917	18790	51091	24920
59705	91472	01302	33123	35274	88423	55491	27609	02824	05245
36508	74042	44014	36243	12724	06092	23742	90436	33419	12301
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97914	61228	42903	71187	54964	14945	20809	33937	13257	66387

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